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UNITED STATES DEPARTMENT OF AGRICULTURE

REPORT OF THE FOREST SERVICE

FISCAL YEAR 1977

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I. INTRODUCTION

INTRODUCTION

The purpose of this report is to bring the Secretary of Agriculture, Congress, and the public up to date on progress of Forest Service programs during fiscal year 1977.

It includes both voluntary and mandated information broadly reflecting the complete spectrum of the agency's public service activities.

In effect, it combines two reports into one.

Traditionally, the Forest Service has prepared a report for the Secretary to describe the agency's activities for the previous year. Two recent laws have required some additional reporting. They are the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) and amendments to it by the National Forest Management Act of 1976 (NFMA). This report combines key elements from the Chief's Report to the Secretary with the information required by Congress for the first complete fiscal year of Forest Service operation under the Resource Planning Act.

The first RPA documents were issued by the Forest Service in early 1976, as the initial steps in implementing the Act. "The Nation's Renewable Resources--An Assessment," which provides the basis for "A Recommended Renewable Resource Program", forms the overall guidance and direction under which the agency is working. The Forest Service will be guided by the original Program until both the Assessment and Program are updated in 1980. A considerable amount of planning, preparation, and data gathering occurred in 1977 to make the next editions of the documents even more valuable to the agency, the Department, and Congress.

At the same time, the Forest Service has proceeded to implement the provisions of the National Forest Management Act. It is a more specific directional tool, prompted by court decisions which had virtually halted the use of scientific forestry in managing the Nation's forests. The NFMA lifted the restrictions set by these decisions. Additionally, the Act sets guidelines for silvicultural practices, land management planning, and other activities.

The first step in implementing the more recent Act is rulemaking, much of it is still under way. Some rules, including the highly controversial rules for sealed and oral bidding on timber, have been set in motion. Rules for other more complicated activities, such as land management planning, are still in the works. During the year, a committee of scientists was selected and is now at work helping prepare the land management planning procedures. A National Forest System advisory committee will also soon be named by the Secretary.

The process of carrying out the requirements of still another piece of legislation has also involved the Forest Service in rulemaking exercises during the year. It is the Federal Land Policy and Management Act of 1976, the so-called BLM Organic Act. The Forest Service has been working very closely with BLM to formulate rules for grazing fees, rights-of-way, and other joint activities.

In all three acts mentioned, public involvement is the key phrase. It is, and will continue to be, an integral part of the decision-making process for both preparation of rules and proposals of land-management action programs.

The year 1977 was also one of initiatives triggered by the new Administration:

* A new emphasis was placed on stepping up the federal cooperative efforts with State and private landowners as a means of improving the productivity and quality of goods and services from the Nation's forests.

* A new resolve was expressed and activated to complete the Nation's wilderness preservation system.

* With the endorsement of Congress, efforts were stepped up to combat unemployment.

* New emphasis was given forestry research planning and policies needed to solve natural resources problems.

The Forest Service was an active participant in actions supporting all four of these initiatives. Working with other Department agencies, State and Private Forestry began formulating initiatives in response to the President's call for stimulation of improved management of private, nonindustrial forest lands. The the Forest Service completed an inventory of 65.7 million acres of roadless and undeveloped areas, launched Young Adult Conservation Corps activities for several thousand unemployed youths, and in cooperation with schools of forestry and other research units around the country, staged a series of conferences aimed at formulation of a national direction for forestry research and the forestry research program for RPA. A national conference took place early this year.

More details on these actions appear on the following pages.

The remainder of this report is divided into three major divisions--the first section is a narrative of major Forest Service accomplishments during the year; the second is devoted to the special items required by RPA and NFMA by Congress; the third contains more detailed information and statistical tables forming the Appendix.

II. PROGRAM ACCOMPLISHMENTS

II. A.

NATIONAL FOREST SYSTEM

NATIONAL FOREST SYSTEM

The Forest Service made progress towards achieving the RPA Recommended Program for the NFS in FY 1977. Overall, two major factors affected accomplishments; one, actual appropriation did not directly correlate with the RPA recommended program; and two, weather extremes placed demands on manpower and the land itself. Table 1 shows a summary of selected accomplishments and costs for the original RPA estimates, funded targets for FY 1977, and actual accomplishment for FY 1977.

RECREATION

In the recreation segment of the NFS program, the total actual recreation use (developed plus dispersed) falls short of reaching the funded FY 1977 program by approximately five percent, but falls within the high-low range of the original 1977 RPA estimates. This small reduction can be traced to the regions where summer drought drastically affected forest and water-related recreation activities. The lack of snow in the western United States also reduced winter sports use on some National Forests.

The large variance between the RPA 1977 estimate and the FY 1977 actual accomplishment for trail construction/reconstruction can be explained by the excellent support of volunteers in the trail program.

WILDLIFE AND FISHERIES

The wildlife and fish habitat improvement work accomplished in FY 1977 exceeded the funded program by approximately 25,000 acres but fell far short of the RPA estimates. The funding level requested for the RPA level for the National Forest System totaled $17 million (all systems) while actual funding for for FY 1977 was $14.1 million.

The aggregated effect of all work provided a total of 1,017,300 acre equivalents for both fish and wildlife. Of this total the contribution towards wildlife habitat improvement was 1,012,600 acre equivalents, while fisheries habitat improvement work contributed 4,700-acre equivalents. Acre equivalents are acres of habitat improved, which are greater than the actual area treated and more fully represent the impact on wildlife habitat attributed to improvement activities. In future years, acre equivalents will be utilized rather than acres.

Nongame wildlife was an important and increasing part of the management of the National Forests in 1977 through coordination with other resource management activities, such as modification of timber sales to protect nests of hawks and owls, and through direct habitat improvements, such as nest structures for songbirds and hawks. Management guidelines for dead (snags) and

live wildlife trees have been developed and are being implemented on some National Forests for cavity-dependent birds and mammals. Development of wildlife habitat-timber management relationships is aiding in the protection of nongame wildlife habitat. Programs to provide diverse vegetation benefit nongame species as do habitat improvements for game animals, such as water developments, wetlands, and food plantings.

Fiscal year 1977 was the beginning of an effort to capture the expanded K-V authority allowed for wildlife habitat management under the National Forest Management Act of 1976. Sale area K-V plans have been revised to take advantage of opportunities for increasing the productivity of big game habitat, fisheries potential, and other wildlife species on National Forest land.

RANGE

The livestock grazing production goal of 11.4 million animal-unit-month (AUM) was met in FY 1977. However, treatment of low ecological condition rangeland was not included in the FY 1977 budget and the goal for this important item was not met. Much of the 115,000 acres of range revegetation accomplished in FY 1977 did contribute to improving rangeland condition. Also, 920 new starts in improved allotment management will result in improvement in condition of additional rangelands. In total, approximately 150,000 acres of low ecological condition rangeland were treated out of the RPA planned treatment level of 335,000 acres.

TIMBER SALE OFFERING

The RPA recommended program goal for timber sale offerings was not achieved because the FY 1977 program was funded at a lower level than called for in the recommended program.

In addition to the 11 billion board feet actually offered during FY 1977, an additional 590 million board feet were prepared but not offered. The reasons why this timber was not offered for sale include:

1. Timing of supplemental funding and ceiling allocation.

2. Some sales were held up by appeals on SBA set-a-side allocations.

3. Some sales were held up temporarily due to SBA road construction options.

4. Appeals of land management plans.

The 590 million board feet is scheduled for offering in FY 1978 in addition to the regular 1978 program.

SILVICULTURAL EXAMINATION

Several regions were short of timber sale preparation and administration funds to meet the allocated targets. It was necessary to reprogram some silvicultural examination funds into timber sales and reduce the examination targets proportionately. Accomplishments in silvicultural examinations did meet the revised approved targets.

REFORESTATION

The drought throughout the West and Lake States reduced planting opportunities from those proposed in the budget submission. Also some planting stock was lost in the nurseries because of the drought conditions over the past several years. Actual accomplishments were significantly low because of these two situations. In some instances some of the planting stock was carried over for use in 1978.

TIMBER STAND IMPROVEMENT

It was necessary to reprogram a portion of the P&M TSI funding into timber sales to meet the allocated sales targets. Targets were reduced accordingly. There was a significant difference in accomplishments in both P&M and K-V compared to targets. Because of the drought and extremely long fire season in the West, many Forest Service supervisory personnel and contractors were on fire duty most of the productive field season for TSI work. This affected all regions and all parts of the country because of work assignments of many out-of-region personnel to the fire suppression areas.

ROAD CONSTRUCTION

Road construction is 541 miles less than the lowest estimate shown in RPA.

The reasons for the shortfall include:

1. Under the National Forest Management Act, purchasers qualifying as small business concerns turned road construction required in their timber sale contract over to the Forest Service for construction. Due to timing the Forest Service could not award road contracts in FY 1977.

2. Fires in the West caused delays in timber sales which, in turn, caused a reduction in road construction.

3. Due to the timing of supplemental funding, we were unable to obligate all the road funds in FY 1977.

Item 1 will continue to cause impacts on planned accomplishment in the future.

FUELS MANAGEMENT

RPA high goals of 260,000 acres and FY 1977 planned targets of 127,000 acres of fuel treatment were exceeded when 266,200 acres of fuel treatment were accomplished.

The regions were able to accomplish this additional work with additional funds provided through the budgeting process and through a revision in the financial management of fire management funds. A congressional increase of $1 million was provided for Southern California for fuelbreak construction in the chaparral brush fields. An additional $186,000 was also provided by Congress for the disposal of old logging slash on the Bull Run Municipal Watershed near Portland, Oregon.

Financial management was improved with the establishment of the Fire Management Fund. This allowed the Forest Service use of all presuppression funds to accomplish all facets of fire management work. The use of these funds enabled the accomplishment of additional acres of fuel reduction through prescribed burning primarily in the Southeast.

LANDS ACQUIRED AND EXCHANGED

The shortfall was primarily in the land exchange area. Many proposed cases were delayed as a result of reappraisals required by the Federal Land Policy and Management Act (P.L. 94-579), controversy surrounding some exchanges and delays in the land management planning process.

These outputs do not directly relate to the RPA goals. The FY 77 budget instructions indicate a land exchange goal of 171,900 approved acres (offered and selected). The RPA goal is expressed as offered acres approved. Expressed as RPA objectives, the FY 77 purchase and exchange goal would have been 146,300 acres. Accomplishments were 138,200 acres in these terms.

MINERALS LEASES AND PERMITS

Offers to lease have been received by the BLM and forwarded on to the Forest Service in a volume that would have put us well over our RPA estimates. However, we were unable to recommend the issuance of the leases as land management planning has not been completed and the requirements of NEPA could not be met.

SOIL AND WATER RESOURCE IMPROVEMENT

Treatment of 16,782 acres were treated to improve the water quality and soil productivity during FY 1977. Activities included sheet erosion reduction, soil quality enhancement, channel stabilization, and sediment retention structures.

The RPA goal of 20,000 acres was not achieved because of a funding level lower than the RPA recommended program.

Table 1
NFS
Program Accomplishments

Item	Unit of Measure	1977 RPA Estimates High	1977 RPA Estimates Low	FY 1977 Funded Targets	FY 1977 Accomplishments
Recreation Use	Million RVD	211.0	201.3	216.4	204.8
Developed	Million RVD	(76.3)	(73.3)	-	(73.8)
Dispersed	Million RVD	(134.7)	(128.0)	-	(131.0)
Wilderness Maintained	Million acres	15.2	15.2	15.2	15.8
Trail Construction/ Reconst.	Miles	461.0	-	937.0	1,222.0
Habitat Improvement	Thousand acres	513.0	487.0	193.1	218.0
Wildlife	Thousand acres	(500.0)	(475.0)	-	-
Fish	Thousand acres	(13.0)	(12.0)	-	-
Grazing Use--Livestock	Million AUM	11.4	10.8	11.3	11.4
Potential Yield	Billion cu. ft.	2.75	2.65	-	3.24
Timber Sale Offering	Billion bd. ft.	10.40	10.40	11.27	11.01
Silvicultural Exams	Thousand acres	6,307.0	-	7,072.0	6,553.0
Reforestation	Thousand acres	420.0	403.0	487.9	351.8
Appropriated	Thousand acres	(210.0)	(193.0)	(199.6)	(157.2)
K-V	Thousand acres	(210.0)	(210.0)	(288.3)	(194.6)
Timber Stand Impr.	Thousand acres	612.0	588.0	516.7	386.3
Appropriated	Thousand acres	(412.0)	(388.0)	(312.2)	(230.0)
K-V	Thousand acres	(200.0)	(200.0)	(204.5)	(156.3)
Road Construction	Miles	10,547.0	10,133.0	10,153.0	9,592.0
Appropriated	Miles	(746.0)	(716.0)	(793.0)	(1,020.0)
Purchaser	Miles	(9,801.0)	(9,417.0)	(9,360.0)	(8,572.0)
Fire Prevention	No. of Man Caused Fires	6,834	6,566	-	7,358
Fuels Management	Thousand acres	260.0	249.0	127.0	266.2
Land Acquired & Exchanges	Thousand acres	126.5	121.5	223.1	179.6
Land Line Location	Thousand miles	2.4	2.3	3.3	3.8
Mineral Leases and Permits	Million acres	22.9	22.5	-	19.2
Soil & Water Resource Improvement	Thousand acres treated	20.0	-	17.0	16.8

National Forest System
Program Accomplishments (continued)

Item	Unit of Measure	1977 RPA Estimates High	Low	FY 1977 Funded Targets	FY 1977 Accomplishments
Insect and Disease Survey	Million acres	82.1	-	295.6	215.9
Insect and Disease Suppression	Million acres	0.1	-	-	0.4
Receipts to Treasury	Million dollars	535.6	514.6	-	896.7
Costs 3/	Million dollars	1058.9 4/	-	-	1085.4

1/ For definitions of items and unit of measures see appendix D.

2/ Conversion rate is 5 bd. ft. per cubic foot.

3/ Costs do not include the following Program Budget items: Payments to Bureau of Employment Compensation; Coop. Work (trust fund); ASCS expenses (Alloc); O&C Grant Land (Alloc.); and Federal Highway Administration trust (Alloc.)

4/ To make the original RPA estimates (base year 1975) compare with actual expenditures FY 1977 an inflation factor of 1.145 was utilized (924.8 x 1.145 = 1058.9). The inflation factor was derived from the Survey of Current Business November, 1977, table 19 (7.1) Government Purchases of Goods and Services Federal Column.

II. B

State and Private Forestry

STATE AND PRIVATE FORESTRY

The President, in his May 23, 1977, environmental message, stressed that the Nation's 296 million acres of non-industrial private forest lands be given greater attention. He directed the Secretary of Agriculture to make a study of the cooperative forestry programs as a means of seeking ways to improve the management and protection of these lands.

Under Forest Service leadership, a task group made up of representatives of ASCS, CSRS, Extension Service, and SCS prepared a report and sent it to the President in August 1977. Titled "The Federal Role in the Conservation and Management of Private Non-industrial Forest Lands," it examined approaches available to the Federal government to stimulate such activities on the private forest lands.

Forest Service multiple use cooperative technical assistance accomplishments in recreation, wildlife habitat, and range were quite low when compared to RPA for several reasons. The funding actually provided for these activities was at the historical level and the accomplishments reflect this low level of activity. However, some emphasis was given to activities in these three areas by means of an increase of $456,000 for multiple use technical assistance. This involved 34 pilot projects with 20 selected States, development of guidelines, and training of State Forestry personnel. This type of effort is continuing and is expected to result in increased accomplishments in these areas. Not all State Forestry organizations are interested in or authorized to provide these types of assistance. Some RPA activity targets were not as accurate as they should be. Where this is the case, State input into the 1980 RPA Assessment and Program will result in more realistic targets.

All of the timber management activity accomplishments exceeded the RPA target ranges. Accomplishments for timber technical assistance, forestation, TSI, seedling production, and management plans are consistent with 1976 and up somewhat in most cases. Timber sale assistance, volume harvested, was up about 25 percent over 1976. For both forestation and timber stand improvement the RPA targets and actual accomplishments include Forestry Incentive Program (FIP), Agriculture Conservation Program (ACP), and non-cost share (technical assistance only) efforts. The FIP targets and accomplishments are shown in parentheses. The funded program targets are significantly higher for total efforts than the accomplishment. Part of the reason is that the non-cost share technical assistance reforestation and TSI have been less predictable than FIP efforts. It is expected that an improved target setting and accomplishment reporting process being used in FY 1978, combined with State input into the program budget process

and the 1980 RPA program, will result in more meaningful targets for the total forestation and TSI effort. Total reforestation and TSI were up, led by FIP reforestation and TSI.

An intensified effort during the last half of the year resulted in obligating much of the available FIP funds. Thus the commitment to Congress to reduce the FIP carry-over balance to $6 million was met. The cost-share carry over balance into 1978 was $4.2 million. This is expected to be reflected in 1978 accomplishments. Limited forester time and shortage of technical assistance funds have seriously constrained follow-up work that is needed to convert the "backlog of approved cases" into completed accomplishments. It is expected that FY 1978 funding will resolve some of these problems.

Funding for seedling production has been constant for several years and actual seedlings produced ranged from 608 million to 672 million during 1974 through 1976. An average of about 640 million would have been a more reasonable target for 1977, instead of the 514 million planned. In FY 1978, improvements have been made in the process by which funded program targets are set.

The increase in improved utilization resulted from the emphasis being given by State Forest Products Utilization Specialists to these activities. Original targets were based on average size mills. Some regions assisted some very large mills. Some of the original targets were incorrect. Direct State input into the 1980 RPA program should help to improve the targets.

The Forest Service continued its efforts to encourage efficiency in planning and administration. One of the significant effects was a move among the states toward long-range forestry planning, which will provide a firmer base for cooperative forestry programs.

To permit State Foresters to provide direct input to the S&PF portion of the Resources Planning Act programs, the National Association of State Foresters is encouraging development of state forestry plans. A sample plan format has been adopted, and many State forestry agencies have now become involved in long-range planning.

A policy was put into force in fiscal year 1977 designed to reduce the federal portion of cost-sharing for insect and disease control on private and State lands. As a result of a study and policy action, the federal share for fiscal year 1977 was reduced by more than three quarters of a million dollars. The total cost of cooperative suppression projects was $7.5 million. Previously, the federal share would have been $3.75 million, but under the new cost-sharing policy, only $2.97 million in Federal funds were spent. Despite this reduction, no cooperative suppression project was impaired or curtailed.

Additional accomplishments in forest insect and disease management programs during fiscal year 1977 were:

1. Approximately $4.2 million of Federal funds moved directly and $3.6 million indirectly into Cooperative State Forest Insect and Disease Management Programs for suppression and pest action cost-sharing projects.

2. A volume of 34.3 million cubic feet of merchantable timber volume was protected and 57.8 million cubic feet of merchantable timber volume was salvaged from forests in the South in southern pine bark beetle control efforts. Populations are collapsing in many areas but are still being vigorously controlled. Suppression projects directed primarily at the mountain pine beetle in the West resulted in protection of about 9.4 million cubic feet of merchantable timber and salvage of 5.1 million cubic feet. The mountain beetle outbreak is still raging. More integrated pest management strategies are being tested and stressed for controlling this insect.

3. Through a cooperative effort, foliage protection and prevention of tree mortality were accomplished through spraying 930,000 acres in Maine. With severe damage imminent, the areas were sprayed with Sevin-4 oil, Orthene and Dylox 4. In the West, in Oregon and Washington where some 1.1 million acres were infected, about 417,000 acres of high-use, high-value areas were sprayed with Sevin-4. It is estimated 155.8 million board feet of merchantable timber was protected in addition to other resource values.

4. With the gypsy moth increasing its depredations in Northeastern U.S. (1.6 million acres), cooperative suppression efforts were carried out in New Jersey and Pennsylvania. Some 96,000 acres were treated with Sevin-4 oil and Dylox 1.5.

The Cooperative Water Related Plans are accomplished with funds allocated from the Soil Conservation Service and involve forestry inputs into PL-566 Work Plans and River Basin Studies. Difference between RPA targets and plans actually worked occurred because targets were based on historical trends and FY 77 saw increased activity on the backlog of plans. Improved coordination with SCS is expected to provide better targets in the 1980 RPA Program.

Protection from fires was also a major cooperative activity, particularly with drought prevailing in several areas of the nation. One of the most notable examples was the demonstration again of the value of highly trained, organized, and physically capable State firefighters in helping to fight National Forest fires. About 1,300 State firefighters from 34 States aided Federal firefighters in California and other Western States.

The Rural Community Fire Protection Program continued to make gains in the effort to beef up the fire protection of an estimated 46,168 rural communities in the U.S., which have inadequate protection. The program provided assistance to more than 3,000 communities in organizing, equipping, and training rural fire departments. More than 300 excess military vehicles were converted to fire trucks by rural volunteers, over 100 new departments were organized, and more than 10,000 rural fire personnel received training in fire protection activities.

Through the Advertising Council, Inc. the Smokey Bear program received public service time on radio and television estimated to be worth more than $31 million.

Table 2
State and Private Forestry

Program Accomplishments

Item	Unit of Measure	1977 RPA Estimates High	1977 RPA Estimates Low	FY 1977 Funded Targets	FY 1977 Accomplishments
Recreation Tech. Assists	Thousand assists	4.5	4.4	1.3	1.2
	Thousand acres	-	-	-	114.3
Wildlife and Fish Tech. Assists	Thousand assists	12.0	10.0	2.3	2.3
	Thousand acres	-	-	-	153.6
Range Landowner Assists	Thousand assists	3.7	3.6	0.29	0.3
Forest Range Improvement	Thousand acres	600.0	600.0	40.7	112.2
Timber Tech. Assists	Thousand assists	69.0	66.0	156.7	199.8
Reforestation	Thousand acres	95.0	92.0	428.0	323.6
Forestry Incentives Program	Thousand acres	-	-	(142.6)	(152.7)
Timber Stand Improvement	Thousand acres	67.0	65.0	198.6	351.9
Forestry Incentives Program	Thousand acres	-	-	(198.6)	(155.2)
Seedling Production & Distribution-State Nurseries	Million seedlings	132.0	127.0	514.4	654.0
Improved Utilization	Percent increase Thousand cu. ft.	5.1	4.9	-	5.8
Forest Land Management Plans for Private Woodland Owners	No. of plans	22,700	21,200	38,472	44,945
Insect & Disease Survey	Million acres	292.0	-	-	410.8 1/
Insect & Disease Suppression	Million acres	.5	-	-	10.2 1/
Number of Fires	No. of fires/ Million acres protected	221.0	231.0	-	275.7 2/
Cooperative Water-related Plans	No. of plans	106	102	-	187
Costs	Million dollars	57.3 3/	-	-	63.7

1/ The difference is because State survey activities, where Federal funds were not involved, were not part of the original RPA goals but are reported in the actual figure. Also, the RPA Goals did not allow for claiming the same acres surveyed more than once in a fiscal year. The Southeastern Area claims credit for the entire acreage when treating spots within an area of suppression of southern pine bettle. The 1980 RPA targets will be adjusted accordingly.

2/ CY 1976 fires--FY 1977 statistics are not yet available.

3/ To make the original RPA estimates (base year 1975) compare with fiscal year 1977 actual expenditures an inflation factor of 1.145 was utilized (50.0 x 1.145 = 57.3). The inflation factor was derived from the Survey of Current Business November, 1977, table 19 (7.1) Government Purchase of Goods and Services Federal Column.

II. C

RESEARCH

FORESTRY RESEARCH

The Forest Service conducts research through eight regional experiment stations, the Forest Products Laboratory and the Institute of Tropical Forestry. Field and laboratory research is conducted at 81 locations throughout the United States with outdoor laboratories at 93 experimental forests and ranges.

The experiment stations and their satellites solve natural resource problems of regional, interregional, national, and international significance. Forest Service Research emphasizes strong coordination and cooperation among stations, as well as with universities and other research organizations.

Reflective of cooperative emphasis is the burgeoning development of new national and regional programs of research for forests, associated rangelands, and related natural resources which have been under way for the past 18 months. The efforts were climaxed by a three-day national conference in Washington, D.C., in January 1978 to identify and discuss national and international research needs and priorities. The conference involved 100 delegates from a cross-section of government, professional, environmental, and consumer organizations.

Setting the stage for this national conference were four regional workshops and a special policy symposium held during 1976.

This research identification and priority-setting process was jointly sponsored by the Association of State College and University Forestry Research Organizations (ASCUFRO), the Cooperative State Research Service, and the Forest Service of USDA under the auspices of the Department's Agricultural Research Policy Committee. They also worked closely with the Natural Resources Council of America (46 environmental and user organizations), the Renewable Natural Resources Foundation (11 renewable natural resources professional and scientific societies), and a substantial number of industry trade associations and consumer groups.

The results of the conference are expected to have an effect on the Forest Service's multidisciplinary research program, which presently provides a scientific basis for management use, and protection of the Nation's renewable natural resources, as well as assistance to foreign countries.

MAJOR FORESTRY RESEARCH EFFORTS

1. Research applied to National Forest Management Practices-- Forest and range management research is focused on establishment, improvement, growth of trees, grasses and other forest-related vegetation.

This, plus watershed management research, also integrates recreation and esthetic objectives with other multiple uses.

2. Protecting National Forest Resources - This research is aimed at protection of forest resources from fire, insects, diseases, air pollution, and animal pests in ways that are not detrimental to forest ecosystems.

3. Improving Wood and Fiber Potential - Forest products and engineering research provides new and more energy efficient products and processes. To support research in this category, programs also: (a) Develop new harvesting and transportation technology to support forest management and protection activities; (b) evaluate alternatives for lowering costs by utilizing and extending forest resources; (c) encompass a continuing resource evaluation to provide comprehensive information on the extent and condition of forests and rangeland and the outlook for future supplies and demands.

4. International Forestry - This activity of Forest Service Research provides leadership in cooperative forestry activities and exchange of technical information with forestry organizations and individuals of other countries.

MAJOR FINDINGS AND APPLICATIONS

1. Research Applied to National Forest Management Practices:

Classifying riparian vegetation assists the National Forest System develop policy. Riparian vegetation provides habitat for threatened and endangered species in the Southwest. In Arizona and New Mexico, there are approximately .5 million acres of riparian vegetation that is subjected to grazing, recreational activities, and land treatments to produce water. A botanical classification of riparian vegetation has been completed that will allow identification of the types that may be sensitive to alternative management practices.

National Forest System is using the information on vegetation classification as basic data to develop a policy statement on riparian vegetation management in the Southwest.

Breeding superior trees can protect forest landowners investments. Investment decisions are based largely on the prospects for financial gains in both public and private forestry organizations. In public agencies, the goal is to invest public funds wisely; in private organizations, the goal is to produce profits for the owner. Forest Service ecnomics research is designed to identify practices that will yield good returns on investments. A recently completed study in Southern United States indicates that breeding of superior southern pines is near the head of the list of investment opportunities and is extensively practiced by both the private sector and the National Forest System.

Volume gains in excess of 12 percent from planting superior trees appear certain. Gains of more than 30 percent are being recorded on about one-fifth of the acres planted with superior pines. The result is an average increase of 30 percent in the present net worth of the plantations. The economists conclude that both public and private owners of large tracts will find it profitable to invest in the seed orchards, nurseries, and genetics research needed to produce superior trees.

In the private sector, almost 200 million superior trees were planted in the South by industrial and other private landowners in the 1975-76 planting season. The National Forest System, in the Southern Region in 1977, used improved seed on approximately 24,000 acres out of a total of 37,697 acres seeded. Seed from orchards, or from selected seed production areas identified for their superior genetic characteristics, will provide increased growth and increased value for National Forests in the South.

Simulating management practices is possible through the use of a new managed yield simulator for Douglas-fir. Results from numerous spacing and thinning trials have been synthesized into a simulation model of Douglas-fir stand structure and development to provide details on distribution of yield for various management regimes. The model has already been applied to a 50-year-old Douglas-fir spacing trial to verify the beneficial effects of wide initial spacing and the detrimental effects of carrying too many trees relative to the size to which they will be grown. Other management practices that can be simulated are planting, thinning, and fertilization. The simulator is operational and used by forestry planners in the National Forest System, by other Federal and State agencies, and by industry in the Pacific Northwest.

New computer program aids multiple use management decisions in eastern hardwood forests. A new technique, named DYNAST, has been developed to enhance forest management for multiple benefits. DYNAST is flexible enough to guide managers towards the production of whatever possible combination of benefits they choose. The model's

structure allows assessing an infinite number of management alternatives by predicting how each would affect timber production, habitat for a number of animal species, sediment flow, and esthetics of the landscape. It can enhance decisionmaking and help forest managers balance values in response to conflicting demands. DYNAST will be especially helpful in guiding National Forest management decisions in response to the National Forest Management Act of 1976.

Timber harvesting trade-offs can be evaluated. Reductions in land available for timber harvest, rising public concern for esthetics, and environmental regulations require more complete planning of harvesting operations. Management practices and harvesting techniques must provide compatibility between timber removal and the environment. A computerized planning system has been developed that allows evaluation of the costs of trade-offs between environmental concerns, resource utilization, and productivity. This system allows rapid, accurate economic evaluations of many alternative management plans that involve timber harvesting and road building and results in better forest resource management and use.

The computerized system is in use on five National Forests in the Pacific Northwest; numerous other forests are planning or are presently implementing the techniques, using desk-top computers. A companion technique is used by about 75 managers at the District and Regional levels to assist in planning operation.

Easing timber shortages and improving the esthetics of harvested areas have put increased emphasis on the potential use of logging residues. Recent research has shown how much residue is left in the forest and at landings after timber harvesting in West Virginia hardwood stands. Type of harvesting system, types of products removed, and stand characteristics are used to predict residue yields. These yield predictions guide eastern National Forest managers in forecasting the impact of different management systems and harvesting methods on residue accumulations. These estimates will also help private land managers decide if residues should be utilized, left in place, or processed to improve esthetic standards.

Visualizing the effects of management practices is a real concern of foresters who are sensitive to the charge that they create ugliness in timber harvesting operations. They recognize the need to preserve and enhance the beauty of forest vistas. To do so, however, they need to be able to visualize the effects of major operations on the beauty of the landscape. The Northeast Station has produced a computer program that should help.

This program, called PREVIEW, converts mapped treatments into perspective drawings which show how changes will appear from selected viewing points. PREVIEW can produce a series of drawings showing not only how an area

will look immediately after a timber harvest, but also 10, 20, and 30 years hence. This system has been accepted by the Monongahela National Forest for use in their land management practices. Also, geometronics units in the Northeast, the West, and the Washington Office have adopted parts of the program for their use.

Displaying alternative land plans in order to deal effectively with landscape planning problems is now possible with a computerized system named MOSAIC. Probably the single most difficult land resource output to quantify is the scenic quality of forest and range landscapes. To assist landscape planners, the system was developed and tested on National Forest System lands, and guidelines have been prepared for quantifying certain aspects of landscape quality. The National Forest System, the Forestry Commission of Scotland, and the Bureau of Land Management are now using the MOSAIC landscape planning system to better define the effects of alternative landscape plans.

Options for southeast Alaskan timber are now more fully understood. A large supply of timber is one of the major assets of southeastern Alaska, and Forest Service management policy has been oriented to strengthen employment and economic growth in the area through its use. Recently, however, land managers have faced new issues.

Alaskans are becoming increasingly concerned about preservation of esthetic values both for themselves and for a growing tourist industry. The economic climate is also changing. The world market for pulp has weakened. One pulping firm plans to shift to a different product and another long-studied pulpmill development has been scratched. A large sawmill that produced dimension lumber has closed. The great distance to markets in the lower 48 States and restrictions on exports to Japan are major problems in marketing Alaskan timber.

Together, these conditions raise many questions for land managers and regional developers. To provide answers to these questions, a joint study was conducted by economists of the Pacific Northwest Station working with National Forest and State officials. Their report, now being reviewed by State and National officials, clarifies probable effects of timber management and sale options on employment and regional development, and provides an improved basis for developing long term management strategies for southeastern Alaska.

Providing habitats for endangered species can be achieved when we know what the habitat requirements are. The Forest Service avoids actions that will harm an endangered species, and tries to provide the best habitat possible. The results with the red-cockaded woodpecker in the South show what can be done.

The red-cockaded woodpecker exists in scattered but apparently viable populations throughout the range of southern pines. It is listed as endangered because its nesting habitat--stands of old growth southern pine--has steadily diminished as timber management has been intensified and tree cutting cycles have been shortened.

Studies have shown that woodpecker clans range over areas as large as 555 acres and defend territories as large as 205 acres. Within their territories, the woodpeckers utilize a wide range of stand ages and conditions. They eat many species of insects and spiders.

This information is now being used by National Forests in the Southern Region to revise habitat management guidelines. The same information has been used by the Endangered Species Recovery Team of the USDI Fish and Wildlife Service to develop a recovery plan for the species.

The return of the coho salmon and other anadromous fish from the sea to the streams of their birth for spawning is one of the great wonders of nature. Forest managers need to know if their activities are interrupting this phenomenon, and researchers at the Pacific Northwest Station are providing the answers.

Streamside vegetation is very important to fish habitat for two reasons. It reduces stream temperatures and it reduces the amount of sediment reaching streams. The salmon spawn in streambed gravel, often laying eggs as much as 12 inches below the surface of the gravel. If the gravel is clogged with sediment, sufficient oxygen may not reach the eggs and fry. Furthermore, the fry must work their way up through the gravel, and they find this very difficult when sediment is present.

Considerable research has been done in artificial streams where conditions can be carefully controlled. Results indicate that round gravel collects more sediment than angular gravel at low streamflow rates. At streamflows much over 1 foot per second, however, the round gravel appears to be preferable. This information is helpful to those who are considering construction of artificial spawning areas. Initial results from investigation of this problem are being applied in National Forests in Alaska, the Pacific Northwest and California, and on lands managed by Oregon, Washington, California, and Idaho.

Containerization helps reduce reforestation backlog in the South. About 3 million acres of southern pine forests must be reforested annually if the predicted demands in the year 2000 are to be met. Currently, less than half the needed acreage is being regenerated. Research studies and pilot tests indicate that container planting can be used to extend the planting season, to obtain better survival

and growth than with regular nursery stock, and it is adaptable to more mechanized planting equipment than regular planting stock. Container planting is being used in the Kisatchie and Florida National Forests to catch up on the reforestation backlog of longleaf pine. Furthermore, it is of great interest to State and private industry groups because container planting gives additional flexibility in managing all types of forest lands.

Streamflow can be increased from Arizona chaparral lands by converting them to grasslands. Eradicating deep-rooted shrubs and replacing them with shallow-rooted grasses and forbs that use less water, means that more streamflow for longer periods is available for agriculture, industry, recreation, and domestic uses. Annual increases of water from experimental watersheds after chaparral was converted to grass have varied from about 1/3 of an inch to over 5 inches. Conversion of 20 percent of the 350 million acres of Arizona chaparral (the amount considered suitable to treat) would increase water yield by an estimated 140,000 acre-feet annually.

Based on research results, the National Forest System is planning treatment of 1,300 acres of chaparral through prescribed burning and mechanical methods on the Prescott National Forest. This will result in on-site increases in water, plus range and wildlife habitat improvement.

Revegetation after surface mining is an increasing need as America increases it dependence upon surface mining for minerals and coal. Ways must be found to return lands disturbed by surface mining to productive uses. That is one goal of Forest Service research in a program called SEAM (for Surface Environment And Mining). Research results are quite encouraging.

No single revegetation procedure or plant species will restore all lands because the disturbed areas differ so widely. Mining occurs on areas ranging from salt-shrub desert to alpine tundra, and spoils range from toxic acid to saline. Research shows, however, that these conditions can be overcome. In the West, experimental plots and demonstration areas have been set up on many types of spoil, and revegetation has been successful. Two of the keys to success are careful planning of mining and reclamation and a thorough knowledge of spoil characteristics.

The National Forest System uses the revegetation knowledge gained from this research and development as coal mining occurs on National Grasslands of the Northern Great Plains. It is being utilized by industry on State and private lands being mined in Montana and Wyoming, and by National Forest System on lands being mined for phosphate in southern Idaho. Comparable knowledge about revegetation of sites mined for acid-producing heavy metals is beginning to be used successfully by industry on the Salmon National Forest and at the Kennecott Company holdings near Salt Lake City.

Smoke management guidelines are helping land managers plan prescribed burning. Often the most practical way to prepare a site for reforestation or to eliminate concentrations of fuel that would cause major damage in a wildfire is by a prescribed burn. But burning at the wrong time or place can create unacceptable concentrations of smoke over populated areas or highways. A product of research is a smoke management guidebook to help southern forest land managers and air-quality personnel decide when prescribed burning is acceptable. With the guidebook, a user can predict probable concentrations of particulate matter for up to 100 kilometers downwind from fires. Since these computations can be quite complex, especially if several fires are being planned for the same general area, a computer program has been developed to help land managers. Weather strongly influences the rate at which a fire burns and the manner in which the smoke disperses. The program for calculating rates of dispersion, therefore, has been combined with automated weather interpretation, and the combined system is being pilot tested in cooperation with the National Weather Service and operational forestry organizations.

This guidebook has been used to help forest managers at a series of orientation seminars on 13 National Forests in the South. Managers are learning how to use the guidebook to handle smoke problems and apply the simple principles successfully.

2. Protecting our National Forest Resources.

A computerized firewatch is now operational. Southern California has 12 million people and some of the most flammable forest lands in America. It also has FIRESCOPE, an acronym for Firefighting Resources of Southern California Organized for Potential Emergencies. A research and development project created by Congress in 1972 to foster multi-agency cooperation in fire situations like those of 1970, FIRESCOPE is a computerized system that processes a large volume of data on wildland fires and enables fire departments to use their resources efficiently and economically in fighting the flames. Seven major organizations are participating with the U.S. Forest Service in the effort. They include Federal, State, and city agencies. All have worked out a standardized management structure and procedures to use when they are called upon to work together. There is common terminology and common understanding.

The core of the system is the Operations Coordination Center in Riverside, near the Pacific Southwest Station's Forest Fire Laboratory. There, a close eye is kept on potential fire hazards in seven surrounding counties. A vital part of this command center is a computer terminal on which the coordinates of all brush fires and up-to-the-minute weather data are entered. The computer already has stored in its memory

details on the age and moisture content of the vegetation and the steepness of the slopes. In seconds, the computer forecasts how fast a fire will spread and in which directions. FIRESCOPE also takes advantage of infrared fire mapping from aircraft flying 10,000 to 15,000 feet above a fire. In this way, fire maps can be kept current at night and in spite of smoke. Much of the research needed to make the system work was completed at the Pacific Southwest Station.

In a recent example of this technology, the computer predicted that a fire, just discovered by a sheriff's patrol, would burn 109 acres during the first hour. Firemen later determined that the fire charred about 85 acres in the first hour, which was considered a close match to the prediction.

FIRESCOPE concepts and technology are now operational for 15 million acres of southern California's explosive grass, brush, and timber lands in seven counties protected by Federal, State, and local agencies. With adaptation, the same concepts and technology are available for use in other areas where large-scale emergency situations make multi-agency coordination essential.

The United States and Canada join to fight spruce budworms. A Memorandum of Understanding between the Department of Environment, Canada, and the U.S. Department of Agriculture pools resources against both eastern and western spruce budworms. Persistent outbreaks of the two insects cause unacceptable damage to the forests of both countries, and repeated applications of pesticides have not provided long-term control. The new, jointly funded and administered program will design and evaluate economically and environmentally acceptable systems for combating the spruce budworms and for managing budworm susceptible forests.

New insecticides are effective against gypsy moths. Dimilin (TM) and Orthene (TM), after extensive investigation by Forest Service scientists, were registered by the Environmental Protection Agency in 1976. These insecticides are being used to suppress and regulate the gypsy moth which defoliates and kills trees. Dimilin was used in 1977 on over 10,000 acres in Cooperative State/Federal suppression projects in Pennsylvania and New Jersey, and almost 1,000 acres in New Jersey were treated with Orthene. Dimilin also is being used in Federal regulatory programs which attempt to eradicate the gypsy moth in California (2,441 acres) and Michigan (12,030 acres). Dimilin is unique for its mode of action (inhibiting molting in larvae), its selectivity and toxicity to specific insects, the low dosages required, and its environmental safety.

The Douglas-fir tussock moth no longer goes undetected. A new sex attractant (pheromone) synthesized in the laboratory is beginning to be used operationally in the Forest Service to detect the Douglas-fir tussock moth. The sex attractant is extremely attractive to adult male tussock moths. It is deployed in sticky traps which ensnare the adults. Populations previously missed by other methods can now be located. Other Forest Service units have included detection surveys with the pheromone in 1978 plans.

Three insecticides can combat the Douglas-fir tussock moth. Registration of Sevin (TM) in 1977 for suppression of the Douglas-fir tussock moth culiminated extensive Forest Service research, field tests, and evaluations of environmental safety. In addition to Sevin, two biological control materials--a bacterial formulation, Thuricide (TM), and a naturally occurring nucleopolyhedrosis virus--were registered for suppressing Douglas fir tussock moth in 1976. These new environmentally safe tools are available as needed when a new outbreak occurs.

Insecticide increases supply of valuable southern pine seed. Foresters rely heavily on genetically improved seed to regenerate southern pine forests. Insects can destroy over 50 percent of the potential seed crop from pine seed orchards in Southeastern United States. Research has led to the registration of Furadan (TM) for controlling insects in southern pine seed orchards. A granular formulation of Furadan is incorporated into the soil, providing more safety to the applicator than the one other insecticide registere for cone and seed insect pests. Furadan now is widely used on most seed orchards in the South.

Root-rot mortality can be reduced. New guidelines show how to reduce losses from Annosus root rot of southern pines. Growth and productivity of southern pine forests are adversely affected by a root-destroying fungus, Fomitopsis annosa (Fomes annosus). Much of this loss can be prevented by adhering to recently released research findings. Prevention and control measures begin with estimating site hazard under the newly developed guidelines. On high hazard areas below 34 degrees N. latitude, thinning should be conducted in May through August except where the southern pine beetle is a threat. Above 34 degrees N. latitude, thinning in the summer may give inconsistent control and stumps should be immediately coated with technical grade granular borax. Additional measures of control, such as prescribed burning before and after thinning, reducing the number of thinnings per rotation, biological control using a competing fungus, Peniophora gigantea, and planting of longleaf pine on some sites also will reduce losses. This knowledge is being used to a limited extent by southern forest managers.

Dwarf mistletoe can be controlled in western forests. The impacts of dwarf mistletoes in western forests can be reduced through technological advances. In many forests, these parasitic plants have rendered entire stands unmerchantable or severely restricted their productivity. To reduce these losses, research has developed an array of forest management strategies which can be applied to a specific condition. Currently, forest managers in the private, State, and Federal sectors are utilizing this knowledge to manage forest stands in several locations in the western United States.

Protective sprays control pine needle cast. A fungus, Lophodermium pinastri, causes severe needle cast to species of pines in the United States and adjacent portions of Canada. Damage in nurseries and young stands is especially severe. Recent research demonstrated the feasibility of controlling these losses by protective sprays with fungicides. This technology is being applied in several nurseries and Christmas tree plantations in the Pacific Northwest.

3. Improving Wood and Fiber Potential

A new machine handles small logs efficiently on steep mountain slopes. Mountain loggers in the eastern and western United States have long needed a machine that would remove logs from young stands on steep slopes without damaging the soil or the uncut trees. In the absence of such a machine, foresters have been unable to prescribe thinnings that they knew were needed. Working closely with loggers and foresters, engineers at the Pacific Northwest Station have come up with a solution. They call it the peewee yarder.

This machine is designed to handle small logs efficiently and quickly. It uses a skyline system that lifts logs off the ground, eliminating soil damage. Major innovations in the design of the drum drive permit line speeds of up to 750 feet per minute. High speed is necessary if movement of small logs is to be economical.

About 75 precursors to the peewee are in use today by private firms. These early models provide more harvest opportunities than were available before. The latest peewee prototype, now being field tested, should greatly improve timber culture on steep slopes by giving foresters and loggers a fuller array of useful harvesting systems.

Logging residues in northern hardwoods. Northern hardwoods are a valuable timber resource over most of the northeastern United States. They also are high in potential heat energy value; each green ton is approximately equal to a barrel of oil. A detailed study and report was completed recently that relates residues weights and volumes to sawlog recovery. Typical results show that 5 to 10 tons of wood may be left as residue for every thousand board feet of logs removed. Studies are now underway on systems to recover this residue so it can be used for either pulp or fuel.

A mechanized system has been developed for thinning small trees. Millions of acres of young hardwood forest in the eastern half of the United States can benefit from thinning, but there are few markets for the small trees that might be cut. One of the most promising markets is for fuel, probably for industries, but thinning procedures used in the past have not been efficient enough to deliver the wood at a competitive price. Engineers at the North Central Station believe that wood can be competitive if thinning is highly mechanized and highly efficient.

A new mechanized thinning system appears promising. All trees in rows 10 feet wide are sheared by a large machine that places them in bunches. These bunches are hauled to a landing with a grapple skidder. At the landing, the logs suitable for lumber manufacturing are removed and the remaining material is chipped and blown into vans. These chips can then be profitably hauled to nearby industrial plants as fuel. Studies of costs and returns have been made and Michigan has completed trials that have resulted in plans to use the system on large tracts of young hardwood forests.

The utilization of standing dead timber is promising in the Pacific Northwest where an estimated six billion board feet of salvageable dead timber is available on accessible National Forest lands. Research results of several studies indicate that much valuable lumber can be produced from trees that have been dead for several years. The volume of lumber recovered from grand fir dead for two years was only five percent less than from comparable live trees, although there was more lower grade lumber. Studies in western white pine that had been dead up to seven years indicated that recovery values can be worth 29 to 72 percent of comparable live trees. These studies have aided foresters in establishing values of dead timber and providing a source of raw material for particle boards and other composition materials in addition to lumber. This work has aided the National Forest System in making timber sales of dead trees.

Whole tree utilization equipment costs are reduced. To make more complete use of available fiber, trees not suited for sawlogs can be chipped, branches and all. Such whole tree use is encouraged by the economically successful removal of bark, grit, and foliage from the whole tree chips.

Three years ago the Forest Service patented a chip debarking process to clean whole tree chips. A commercial pilot plant has been in operation for over two years. Due to the relatively high capital investment for the patented system, a new system was developed that added a vacuum-air draft stage to the basic process. Capital costs were reduced by 50 percent and unit production costs were reduced 40 percent. Besides economic advantages, improved removal of foliage, fines, and grit resulted. This successful research has now been undertaken by industry with one company scaling-up the new system to pilot plant stages.

New house design cuts lumber need and building costs. The cost of new homes has been rising rapidly, and increases in lumber prices are a contributing factor. An engineer at the Forest Products Laboratory has invented a new frame design that can save both money and lumber. It is called a truss-frame. Both the floors and the roof rafters are trussed.

Advantages of the system are less framing lumber per square foot of house, use of only one size of framing lumber (2x4's), and elimination of ductwork for heating and cooling. Preliminary estimates are that at least $2,300 will be saved in house construction by using this design instead of conventional framing.

The inventor obtained a public patent on the system early in 1977. Since he is a Forest Service employee, this patent permits any firm to use the system without paying royalties. Existing truss plants and wood manufacturing firms have everything necessary to mass produce trussframes throughout the United States. A full sized house is being built to demonstrate the system and encourage its use.

Protection of wood in use extends the Nation's timber supply. Replacing wood destroyed by insects and decay costs both money and trees. Increasing the life of wood in use can extend the supply of timber. Considerable information about the preservation and protection of wood in storage and use is available but not being used. To correct this, a broad-scale, multi-media approach for informing the public of research findings on protection of wood from wood-destroying insects and decay is now in full swing at the Southern Forest Experiment Station. Two unique public information brochures have been produced: "Your Wood Can Last For Centuries" and "You Can Protect Your Home From Termites." The many-faceted public information plan includes training courses, speeches, publications, radio and TV spot commercials, billboard ads, and direct mailings to users. The specific objectives of this effort are to extend the service life of wood by informing the public of research findings for: (1) protecting primary wood products from wood-destroying insects and decay, (2) improving construction techniques to minimize deterioration, (3) correcting existing deterioration problems in homes, and (4) minimizing damage caused by wood-destroying beetles in imported hardwoods.

4. International Forestry Activities:

Through its International Forestry staff, the Forest Service serves as a source of technical expertise for U.S. agencies and international organizations involved in development efforts overseas. During 1977, 16 Forest Service specialists served on resident assignments in nine foreign countries. Four man-years of residency were with the US AID Range and Ranch Development project in Kenya. Another 3-1/2 man-years

of resident service were with FAO field projects in five countries and at the Organization's headquarters in Rome. An additional man-year of overseas residency during FY 1977 is accounted for by one man presently on assignment in Saudi Arabia under Joint Commission Agreement between that country and the USDA. A second man is presently on assignment to UNESCO headquarters in Paris.

During FY 1977, the Forest Service also provided services of 13 specialists for short-term consultant assignments to seven countries in Africa, Latin America, and Asia. These temporary duty assignments accounted for an additional 1-1/2 man-years of Forest Service participation in development efforts sponsored by US AID, FAO, and the USDA under bilateral agreement with developing nations.

International Forestry planned and arranged scientific exchanges with the Soviet Union under the US/USSR Scientific and Technical Agreement in the fields of fire and reforestation.

Under the US/Spain Program on Forestry Research, International Forestry staff reviewed proposals in the fields of Tree Improvement, Forest Protection, and Logging and Utilization, and arranged for two Spanish specialists to visit the United States for 2 weeks each to view related projects in the field.

Under the Special Foreign Currency Program (PL-480), one new project was started with India, two with Pakistan, and two with Poland.

A Cooperative Agreement with Canada was signed for the Spruce Budworm RD&A Program. Cooperative Agreements with Canada are also being negotiated in the fields of fire and general forestry research.

The International Forestry staff has an active role in planning for the U.S. National Committee's involvement in the Eighth World Forestry Congress scheduled for Indonesia in 1978. The Staff Director serves as Secretary to the National Committee and as Chairman of the Subcommittee on Operations and Special Affairs.

The International Forestry staff was involved in the preparation of programs and itineraries for 144 visitors from some 52 countries during 1977. This number includes 16 AID participants and 26 FAO Fellows, for a total of 42 project participants representing 19 countries. There were 102 nonproject visitors, representing 33 countries.

SUMMARY OF RESEARCH ACCOMPLISHMENTS IN 1977

a.	Number of manuscripts published, including those of a how-to-do-it nature.	2,421
b.	Number of documented uses of information resulting from formal consultations.	1,606
c.	Number of management prescription guidelines accepted.	71
d.	Number of new trees or shrubs bred and readied for use.	26
e.	Number of prototype systems developed and tested.	58
f.	First generation models produced, improved, and readied for use.	49
g.	Number of public patents awarded.	13
h.	Number of revised standards published.	19
i.	Number of official position papers, official reviews, or other official documents prepared.	663
j.	Number of training documents prepared.	79
k.	Number of computer models or programs placed in use.	144
l.	Number of slide talks produced for distribution.	53
m.	Number of films produced for distribution.	11
n.	Number of workshops, symposia, or training session hosted.	609

Item	Unit of Measure	1977 RPA Estimates High	Low	FY 1977
Costs	Million dollars	97.3 1/	-	87.3

1/ To make the original RPA estimates (base year 1975) compare with actual expenditures FY 1977 an inflation factor of 1.145 was utilized (85.0 x 1.145 = 97.3). The inflation factor was derived from the Survey of Current Business November, 1977, table 19 (7.1) Government Purchases of Goods and Services Federal Column.

II. D

HUMAN RESOURCE PROGRAM

HUMAN RESOURCES PROGRAMS

The Forest Service has a growing role in administering or hosting a variety of human resource programs. These programs provide work, skills training, and/or education to the Nation's citizens, young and old, and result in significant resource benefits. A total of approximately 48,000 people benefited from the various Forest Service administered programs in FY 1977 and produced approximately $82 million in needed work on public lands.

Youth Conservation Corps (YCC)

Increased funding in FY 1977 provided a work and learning experience for approximately 37,200 enrollees. The $52 million expended in FY 1977 resulted in conservation work valued at approximately $45 million on State and Federal public lands. The goal of the YCC program is to provide gainful summer employment for 15-to 18-year-old youth from all segments of society, provide them with an educational understanding of their Nation's environment, and accomplish needed conservation work on public lands. The program is administered jointly by the Department of the Interior and the Forest Service with a total 30 percent share by grants to the States and territoties.

Volunteers in the National Forest

During FY 1977, 10,949 people volunteered 512 person-years of work to perform a variety of conservation work on the Nation's National Forests. This work was valued at more then $2.8 million. More people volunteered than could be accepted within the authorized $100,000 limit on supporting costs.

Job Opportunities Program

This anti-recession program, commonly called "Title X," administered through the Department of Commerce, provides jobs in urban and rural counties suffering from unusually high unemployment. The Forest Service was given a $33 million share of this program in FY 1976. These funds employed 8,936 persons in FY 1976 and FY 1977 in 35 States, Guam, and Puerto Rico. Of the 191 projects authorized, 61 were by grants to States. The approximately 3,147 person-years produced $40.9 million of resource work on National Forests and State lands.

Job Corps

The Forest Service operates 17 live-in conservation centers with a capacity for 3,452 Job Corps enrollees on National Forests, under agreement with the Department of Labor. Job skills training and education are provided to enrollees in a forest work environment. During the period from July 1, 1976 through FY 1977, 6,860 enrollees were successfully placed from these centers. Work evaluated at over $12 million was produced by enrollees in the job skills portion of the program. Approximately $3 million of this total was on conservation-related projects on National Forests, the remainder was on center-related work. The objectives of this program are to provide disadvantaged enrollees with job skills and education to enable them to find productive work or continue further education. Funding totaled $32 million. Expansion of centers is planned for FY 1978.

Senior Community Service Employment Program (Older Americans)

Under agreement from the Department of Labor, the Forest Service employed approximately 1,800 older workers on various conservation projects on National Forests in 29 States during the agreement period of July 1, 1976, through June 30, 1977. Funding of $4.6 million plus Forest Service-provided materials and supervision resulted in conservation work valued at more than $6 million. The objectives of the program are to provide employment to workers over 55 years old who meet poverty income criteria. Utilization of their experienced skills produces valuable conservation work, as well as giving the workers a sense of pride in being productive citizens. This program is being expanded to over $10 million in FY 1978.

Young Adult Conservation Corps (YACC)

A major new employment program for unemployed young people, ages 16 to 24, was signed into law in August 1977. This Department of Labor program will be administered under a joint agreement between the Departments of Labor, Interior, and Agriculture. The YACC will include a 30 percent fully funded State grant program. The Forest Service's $116.5 million share of this program will employ approximately 11,800 enrollees including 3,330 in State grant programs during FY 1978. By the end of FY 1978, 25 percent of the enrollees will be in residential camps.

Human Resources Selected Accomplishments

Item	Unit of Measure	RPA Estimates High	RPA Estimates Low	(FY 1977) Actual*
Youth Conservation Corps	No. of participants (thousands)	11.1	2.8	11.9
Job Corps	No. of Enrollee completors (thousands)	6.6	6.4	6.4
Other Cooperative Human Resource Programs	No. of participants (thousands)	9.2	8.8.	10.7

* Actual number of participants in Job Corps and Other Cooperative Human Resource Programs is based upon the reporting period July 1, 1976, through September 30, 1977.

III.

SPECIAL ITEMS

III A.

LAND MANAGEMENT PLANNING

LAND MANAGEMENT PLANNING

For fiscal year 1977, 27 draft environmental statements and 39 final environmental statements were filed with the Council on Environmental Quality (CEQ). This brings the total number of National Forest-level unit plans (as of October, 1977) filed with the Council on Environmental Quality to 276 draft environmental statements and 217 final environmental statements since the guidelines of NEPA were established. With approximately 1,100 unit plans necessary, this would put total accomplishment through the final stage at approximately 20 percent.

The draft regulations for Section 6 of the National Forest Management Act were available for limited in-Service review (Regional Foresters, Staff Directors, Deputies, etc.) the week of October 17, 1977, and for discussion at the Committee of Scientists' meeting in San Francisco on October 27-28, 1977. Other significant milestones are:

1. January 1978---Begin formal rulemaking for section 6 regulations.

2. May-June 1978---Completion of Forest Land and Resource Management Planning direction for FSM 1924.

3. October 1, 1978---Regulations for Section 6 promulgated.

4. January 1, 1981---Completion of Regional Planning.

5. December 31, 1983---Forest Service's target date for completion of Forest Land and Resource Management Plans as covered in Regulations.

6. October 1, 1985---NFMA requirement for completion.

III B.

COSTS AND BENEFITS

COSTS AND BENEFITS

Section 6(1) of the Resources Planning Act called for formulating and implementing a process for estimating long-term costs and benefits to support the program evaluation requirements. The process was to be developed "as soon as practicable." Several efforts are currently underway to develop the required process. In the interim, the relative worth of the actual 1977 program will be demonstrated by comparing income, receipts, and user values to total Forest Service expenditures. In addition, a discussion of the process development efforts is included.

1. BENEFITS vs. COSTS

Income and Receipts (a)	976.0*
Recreation and Wildlife User Benefits (b)	949.0
Total Benefits	1,916.0
Program Costs (c)	-1,236.6
Net Benefits	679.4

*All figures in million dollars

(a) Income and Receipts:

The "Income and Receipts" figure of $967 million includes receipts from sale or use of National Forest resources, special deposits for sale area betterment (K-V) and brush disposal, and the value of timber-purchaser-built roads. It is necessary to include the latter two items in the income portion since the corresponding expenditures are included in program costs. A breakdown of receipts by generating activity can be found in Section A-11 of the Appendix.

(b) Recreation and Wildlife User Benefits:

During fiscal year 1977, 204,797,000 recreation and wildlife visitor-days were logged on National Forest lands. For the most part, these visits were free from user fees; however, the user received a value from their participation. By applying an "explicit public price" to the visitor-days, additional benefits of the National programs can be calculated.

	MRVD Distribution	$/RVD RPA Values		Dollars in millions Benefits
Developed Site Use	72,376	1.15		83.2
Historical Site Use	94	6.40		6.0
Visitor Information Sites	1,306	7.00		9.1
Dispersed Use	92,095	5.00		460.5
Wilderness Use	8,008	11.40		91.3
Wildlife (Game) Use	14,517	10.82	1/	157.1
Fish Use	16,029	8.50	2/	136.2
Wildlife (Non-game) Use	372	15.00		5.6
Total	204,797			949.0

1/ Average of big, small, upland birds, and waterfowl.
2/ Average of cold and warm water.

Implicit pricing of non-market goods has been used in numerous economic and analytical processes. This concept was recognized in the Water Resource Council's "Establishment of Principles and Standards for Planning." Although the concept is not in question, the values applied to activities, such as wilderness use, include subjective determinations. Considering the subjective aspect and the fact that the user benefits represent fifty percent of the total returns, it is desirable to look at the sensitivity of the implicit values. The RPA values in the above table result in a weighted average of $4.63 per recreation visitor-day. Any value in excess of $1.32 per RVD would result in a net return.

(c) Program Costs:

Cost estimates for 1977 under the RPA recommended program total $1,059 million. Adjusting this for inflation to allow comparison with FY 1977 actual expenditures produced $1,213.5 million. A further breakdown of these figures is provided in the following table.

Summary Table
(Dollars in Millions)

	RPA Estimates for 1977		Actual FY 1977
	Original	Adjusted for Inflation	Expenditures
NFS	$924.8	$1,058.9	$1,085.4
S&PF	50.0	57.3	63.7
Research	85.0	97.3	87.3
Total	1059.8	1.213.5	1,236.4

1/ To make the original RPA estimates (base year 1975) comparable with actual expenditures of FY 1977 an inflation factor of 1.145 was utilized. Derived from "Survey of Current Business," November, 1977 (Table 19 (7.1) Government Purchasers of Goods and Services, Federal Column).

2. PROCESS DEVELOPMENT EFFORTS

The analysis displayed under I above assumes that all costs and benefits accrue during the year being evaluated. There is no recognition of prior year costs, future year costs and benefits, or social and environmental trade-offs. The Forest Service presently has several efforts underway to develop a long-term process of measuring and evaluating economic, social, and environmental costs, benefits and trade-offs. The results of these efforts will be incorporated in future reports and in the 1980 Program Update. A brief discussion of process development efforts follows.

Social and Environmental - An overview of a process for "Social Impact Assessment" has been published. A primer and a handbook are under development.

Land Management Planning - The economic guidelines required under Section 6 of the National Forest Management Act are being prepared for publication (See Section III A under Special Items).

Investment Decisions - As a result of an internal study of transportation investment decisions, several task forces have been appointed. Two of these task forces are directly addressing the long-term cost and benefit analysis process. One is developing standardized procedures for determining the economic, environmental, and social values of investment proposals, and the other is developing rules for valuing non-market outputs.

RPA Update - Several efforts are underway to strengthen the 1980 RPA Program Update. Cooperative efforts, with several universities should result in useable methods of valuing program benefits. To insure consistency in evaluation, a handbook of standardized definitions for activities and outputs has been produced.

III C.

SAMPLE TIMBER SALES

SAMPLE TIMBER SALES

GOVERNMENT EXPENDITURES FOR TIMBER SALES SOLD IN FY 1977 AND RETURNS TO THE GOVERNMENT RESULTING FROM HARVEST OF TIMBER SOLD.

For a selective sample of timber sales sold in FY 1977 all government expenditures attributable to the preparation and sale, administration of harvest, and accessment of timber volumes were identified and estimated. Included were costs for these selected sales which were incurred prior to FY 1977, costs incurred during FY 1977, and costs incurred after FY 1977 up to the time all scheduled work is complete on the sales areas.

Also, for these selected sales, all readily measurable returns to the government attributable to the harvest of the timber volumes were estimated. Included in these returns were the expected stumpage receipts, timber stand improvement deposits, and the constructed value of the road access.

The principal reasons for selling timber were (1) for salvage harvest of mortality timber or (2) to improve short-range and long-term growth by meeting the silvicultural needs of individual stands of timber. Closely associated with the above principal reasons for selling timber was the need to provide for both community dependence and timber purchaser dependence on National Forest timber sales.

The timber sales in fiscal year 1977 may be sorted into five general groups with the following characteristics.

GROUP	SALE PREPARATION AND DEVELOPMENT COSTS	IMMEDIATE (SHORT-RANGE) RETURNS TO GOVERNMENT
A. Timber is selected for sale to improve growth and yield of the forest by meeting (1) individual timber stand silvicultural needs and (2) working circle planning goals, such as improvement of age class distribution.		
One	Low to moderate	Moderate to high
Two	High	Moderate to high
Three	Low to high	Lower than costs
B. Timber is selected for sale for salvage harvest for mortality timber.		
Four	Low to moderate	Moderate and greater than costs
Five	Low to high	Usually minimum and lower than costs

Data for timber sales representative of each of these five groups are shown in the following tabulation.

ITEM	GROUP ONE	TWO	THREE	FOUR	FIVE
	-------Improve Growth and Yield--------			----Salvage of Mortality----	
Region.....	Eastern	Northern	Eastern	California	California
National Forest.....	Allegheny	Lolo	Chippewa	Plumas	Plumas
Sale Name.....	Turkey Roost	Fishtrap Saddle	Onteneagen	Babcock Fire	Eagle Feather
Volume Sold Thousand board feet.....	2,187	6,080	2,976	11,470	3,120
Government Expenditures (Dollars in thousands)					
Timber resource..... $	18.5	96.2	20.5	102.3	42.3
Transportation system.....	16.0	165.4	12.7	69.5	-
All other resources.	0.8	27.1	1.5	9.9	1.9
Total expenditures.. $	35.3	$288.7	$34.7	$181.7	$44.2
Returns to Government (Dollars in thousands)					
Stumpage receipts and stand improvement deposits.....$	427.4	288.8	10.7	255.8	13.3
Value of constructed road access.....	29.6	289.7	8.3	206.2	-
Total returns.....$	457.0	$578.5	$19.0	$462.0	$13.3
Averages per Thousands board feet (Dollars)					
Expenditures.....$	16.14	$47.48	$11.66	$15.84	$14.17
Returns.....	208.96	95.15	6.38	40.28	4.26
Return/Expenditure Ratio.....	12.9	2.0	0.5	2.5	0.3

III D.

CERTIFICATION OF TREATED LANDS AND REFORESTATION AND TIMBER STAND IMPROVEMENT NEEDS

CERTIFICATION OF TREATED LANDS AND REFORESTATION AND TIMBER STAND IMPROVEMENT NEEDS

CERTIFICATION OF TREATED LANDS

Procedures for standardized methods of examining and certifying treated lands were not developed soon enough for field personnel to initiate a certification program for fiscal year 1977. A report will be made next year and thereafter.

LAND INVENTORY DATA

Progress is continuing on improving the land inventory data for reforestation and TSI as a result of increased emphasis on this feature of the silviculture program for the past 2 years. In FY 1977, 6,034,000 acres of land were examined and prescriptions prepared. Field data was obtained on an additional 766,000 acres for analysis and prescription preparation. The objective is to examine the land and prepare firm prescriptions for all lands that may need treatment of any kind.

COST OF LAND TREATMENT

The program to accomplish the presently known needed work is given below. These figures exclude the yearly K-V program. Progress is being made on reducing the reforestation backlog. TSI needs have been revised downward from previous estimates because of improved land inventory data.

Item	Reforestation		Timber Stand Improvement	Appropriated Funds required
	Backlog	Current		
	(Acres)			
Total Need	1,660,000	608,000	3,289,000	$785,000,000

The above figures are based on existing inventories and records that reflect expected current costs. These are estimates that in some situations lack site specific data.

Final requirements for reforestation and timber stand improvement needs will be based on the land management plans which will be completed pursuant to the direction provided in the National Forest Management Act of 1976.

Costs include the tree improvement and nursery expansion programs for 8 years and all administrative overhead, as well as the program's share of land planning and environmental coordination. It does not include the costs of other functional assistance to the planning and coordination process. Also not included are acres and costs to implement Sec. 4 of NFMA 1976, which requires establishment and improving the National Forests through reforestation and TSI for enhancement of multiple uses other than timber.

Status of Reforestation and TSI Needs,
September 30, 1977,
by States and Forests (acres)

State	Forest	Reforestation		TSI	
		Backlog	Current	Release	Thin
Alabama		0	27,692	3,096	1,772
Alaska	Chugach	561	2,344	18	854
	Tongass	7,897	35,272	3,893	10,183
Arizona	Apache-Sitgreaves	20,037	1,374	-	159,259
	Coconino	31,753	4,214	-	123,245
	Coronado	240	-	934	1,350
	Kaibab	10,341	541	-	106,559
	Prescott	7,424	85	-	3,777
	Tonto	848	200	-	18,810
Arkansas	Ozark-St. Francis	12,800	17,175	7,286	11,178
	Quachita	10,212	31,510	9,220	13,987
California	Angeles	4,027	140	0	308
	Cleveland	331	15	409	5,228
	Eldorado	1,341	1,183	2,340	2,517
	Inyo	1,105	390	550	4,284
	Klamath	26,629	6,222	7,866	25,246
	Lassen	1,420	1,672	6,936	9,303
	Los Padres	304	7	0	40
	Mendocino	2,363	823	1,850	2,785
	Modoc	3,000	2,532	1,435	38,476
	Plumas	11,200	1,603	30,904	17,415
	Rogue River	100	222	659	249
	San Bernardino	1,233	983	1,277	3,144
	Sequoia	4,336	4,916	3,834	4,489
	Shasta-Trinity	52,338	15,779	18,125	31,917
	Sierra	2,744	2,885	1,573	10,645
	Siskiyou	400	479	432	303
	Six Rivers	16,752	8,977	23,717	7,570
	Stanislaus	16,041	2,325	5,893	4,159
	Tahoe	8,759	4,438	10,640	14,271
	Toiyabe	1,264	-	2,801	7,877
Colorado	Arapaho	2,600	50	-	34,342
	Grand Mesa-Uncompahgre	101,604	-	-	6,415
	Gunnison	10,993	-	-	18,667
	Manti-LaSal	500	-	1,500	1,000
	Pike-San Isabel	12,315	-	1,239	50,216
	Rio Grande	71,195	-	-	35,773
	Roosevelt	1,173	1,173	-	95,649
	Routt	10,425	-	-	9,171
	San Juan	58,765	-	7,611	15,519
	White River	17,976		4,316	4,487

State	Forest	Reforestation		TSI	
		Backlog	Current	Release	Thin
Florida		40,573	27,944	1,300	1,350
Georgia	Chattahoochee-Oconee	-	13,627	1,206	921
Idaho	Boise	61,275	1,403	9,595	27,076
	Caribou	3,916	593	3,455	2,913
	Challis	844	196	-	5,278
	Clearwater	85,227	16,159	22,656	62,496
	Nezperce	16,710	6,845	1,447	23,799
	Panhandle	64,416	3,843	4,067	116,923
	Payette	2,057	4,508	1,493	8,691
	Salmon	3,818	1,219	20	31,102
	Sawtooth	5,336	1,096	-	803
	Targhee	10,029	5,287	4,312	13,204
Illinois	Shawnee	5,552	710	6,587	13,723
Indiana	Hoosier	5,709	181	1,830	7,761
Kentucky	Daniel Boone	8,322	7,175	13,193	27,821
Louisiana	Kisatchie	20,987	17,800	4,594	3,274
Maine	White Mountain	325	-	5,095	3,502
Michigan	Hiawatha	4,496	512	3,191	4,185
	Huron-Manistee	7,570	7,215	20,141	731
	Ottawa	425	75	12,665	112,875
Minnesota	Chippewa	5,293	5,934	21,189	475
	Superior	56,445	1,986	34,202	2,947
Mississippi		3,700	25,204	11,874	13,789
Missouri	Mark Twain	7,838	8,999	20,747	30,219
Montana	Beaverhead	6,410	1,027	-	1,101
	Bitterroot	8,721	556	-	-
	Custer	2,496	-	350	5,715
	Deerlodge	5,019	757	210	20,022
	Flathead	18,313	244	-	86,995
	Gallatin	10,304	-	622	28,488
	Helena	13,035	89	561	17,409
	Kootenai	79,323	11,219	6,270	92,617
	Lewis and Clark	5,310	1,051	16	13,743
	Lolo	18,445	1,654	-	47,532
Nebraska		-	400	-	-

State	Forest	Reforestation		TSI	
		Backlog	Current	Release	Thin
Nevada	Humboldt	-	-	1,225	-
	Toiyabe	400	-	300	1,000
New Hampshire	White Mountain	1,353	-	510	370
New Mexico	Carson	23,340	744	192	30,516
	Cibola	4,040	82	-	37,009
	Gila	3,387	15,175	-	63,303
	Lincoln	13,162	464	-	11,493
	Santa Fe	7,851	3,084	1,000	59,598
North Carolina		13,699	6,086	10,592	5,856
Ohio	Wayne	4,909	672	1,569	7,654
Oklahoma	Quachita	4,933	3,892	1,047	2,909
Oregon	Deschutes	14,449	9,233	3,798	20,678
	Fremont	20,340	5,278	4,934	35,686
	Malheur	3,223	168	2	13,968
	Mount Hood	6,001	14,048	4,029	16,022
	Ochoco	7,095	6,602	2,835	11,165
	Rogue River	20,198	2,657	9,357	5,027
	Siskiyou	41,024	3,765	24,842	13,936
	Siuslaw	2,064	2,657	8,952	6,624
	Umatilla	1,209	9,683	-	10,620
	Umpqua	9,909	5,738	12,215	8,452
	Wallowa-Whitman	50,558	8,979	7,747	23,841
	Willamette	28,138	10,766	16,131	32,053
	Winema	54,559	6,038	3,682	32,780
Pennsylvania	Allegheny	-	3,281	-	1,997
Puerto Rico	Caribbean	1,695	68	5,775	110
South Carolina		135	5,236	1,793	1,253
South Dakota	Black Hills	703	-	-	46,402
Tennessee	Cherokee	896	8,633	2,031	1,738
Texas		-	8,525	1,393	4,964
Utah	Ashley	551	565	621	18,798
	Dixie	4,046	21	-	6,440
	Fishlake	674	543	2,525	3,664
	Manti-LaSal	1,801	104	15,786	5,222
	Sawtooth	-	-	-	-
	Uinta	588	116	-	1,186
	Wasatch	1,359	165	7,598	18,274

State	Forest	Reforestation		TSI	
		Backlog	Current	Release	Thin
Vermont	Green Mountain	1,975	1,913	7,623	5,596
Virginia	George Washington	363	1,095	2,970	8,092
	Jefferson	1,615	1,765	3,612	4,398
Washington	Colville	31,429	1,523	1,060	16,433
	Gifford Pinchot	69,003	59,523	34,600	79,796
	Mt. Baker/Snoqualmie	4,780	2,072	5,635	10,985
	Okanogan	15,124	747	-	53,442
	Olympic	7,627	8,092	17,331	26,845
	Wenatchee	13,897	5,495	4,074	27,446
West Virginia	Monongahela	143	737	3,151	39,300
Wisconsin	Chequamegon	5,919	4,064	4,580	1,325
	Nicolet	6,100	22,650	6,331	1,990
Wyoming	Bighorn	5,692	14	34,568	12,044
	Black Hills	-	-	-	4,589
	Bridger-Teton	5,855	1,746	2,990	10,801
	Medicine Bow	8,023	200	1,175	10,846
	Shoshone	-	590	4,824	9,514
	Targhee	168	112	275	100
	Wasatch	-	-	866	1,050

III E.

PESTICIDE USE

PESTICIDE USE

The Forest Service's use of pesticides in resource management deals with the manipulation of vegetation and populations of animals damaging the forest resource. Since pesticides registered with the U.S. Environmental Protection Agency as being safe and effective are used, only beneficial effects are anticipated. Implicit with this registration is the avoidance of any significant adverse effects when using the pesticides according to their label directions. Environmental analyses are performed to determine the best means of meeting resource management objectives.

Pesticide use in forestry can be divided into four areas: reforestation and timber stand improvement, range improvement and maintenance, wildlife management and resource protection. In 1976, pesticides were applied to less than 0.2 percent of the National Forest lands for all activities. Of the acres being reforested, 20 to 25 percent receive treatments with pesticides.

On National Forest lands, pesticides have been used in the following areas with benefits. Herbicides are used in reforestation because they are the most economical means of vegetation control and decrease the probabilities of human injury. In nurseries, weeds are most efficiently controlled by herbicides and result in larger, more vigorous seedlings at lifting. In site preparation for planting, herbicides used in conjunction with controlled burns reduce the competing vegetation without the soil disturbance of mechancial methods. In releasing seedlings from broadleaf and grass competition, selective herbicides usually reduce the competition in one application, whereas, other methods encourage resprouting and growth of the competing vegetation.

This may require at least an additional treatment. This release allows the seedlings to achieve dominance over competting vegetation. Precommercial thinning using herbicides to deaden trees results in increased growth on the remaining trees, improving the commercial value of the area.

In range improvement and maintenance, herbicides are used to break up large, dense stands of sagebrush and wyethia in order to improve wildlife habitat and increase the amount and value of forage for livestock. Brush that has invaded meadows can also be removed in this manner without damaging the forage or the soil. Noxious weeds, which reduce the value of the range resource and interfere with agricultural production on associated private lands, are economically and effectively controlled with herbicides.

In wildlife management, herbicides are used to create openings in hardwood canopies without disturbing the understory vegetation and grasses. This is beneficial in providing a mix of vegetation and opportunities for ponds to support various species of game. Fish toxicants have been used by State and Federal fish and game agencies on National Forest lands to reduce populations of "trash fish" to provide habitat for desirable game species. This provides for an esthetically pleasing fishing experience. This procedure may also reduce competition for habitats of endangered species of fish enabling them to recover their populations.

The various resources of the National Forest lands are protected by the use of pesticides. Herbicides are used to maintain many miles of fuelbreaks, economically, without subjecting the soil to compaction and erosion. These fuelbreaks protect all resources of the National Forests by providing access to areas for wildfire suppression and also to provide a discontinuity of the fuel source, enabling fire-lines to be established.

The use of insecticides to control defoliating insects and bark beetles provide benefits by preventing the death or unacceptable growth loss in commercial stands of timber. Watershed values, forage, wildlife habitat, and the esthetic and recreation resource of wild lands are protected. The use of insecticides to reduce plague vector populations allows continued use of wildlands by recreationists without the hazards of contacting plague.

Fungicides and bird, rodent, and large animal repellents are vital to protect nursery seedlings and young plantation stock from death, malformation, or growth loss from diseases and animals attracted to the disturbed sites and lush new growth. Protection in these early stages of reforestation is essential because of the tremendous investments in superior seed, nursery operations, and site prepar-ation that are made.

No significant adverse effects have occurred from the use of pest-icides on National Forest lands.

FY 1977 HERBICIDE USE FOR
SITE PREPARATION & CONIFER RELEASE

(M=Miles)

HERBICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Atrazine	9,360	2,685
Dalapon	1,746	1,332
Atrazine & Dalapon	70	18
2,4-D	99,004	51,484
2,4-D & 2,4,5-T	115	11
Picloram, 2,4-D & 2,4,5-T	158	35
Picloram & 2,4-D	66,640	36,876
Picloram	23,999	266
2,4,5-T	8,487	5,313
	2	2M
2,4-D & 2,4-DP	11,473	45,057
Silvex	1,337	2,509
Cacodylic Acid	475	460
Diphenamid	196	13
Glyphosate	1	100
AMS	32	760
MSMA	10,429	2,259
Simazine	395	540
Stoddard Solvent	1,760	3
FUNGICIDES		
Borax	600	2,500

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1/ Amounts shown in pounds unless otherwise noted.
2/ Units shown in acres unless otherwise noted.

FY 1977 HERBICIDE USE FOR
NURSERY/SEED ORCHARD
(GH=Greenhouse, M=Miles, SD=Seed, SDL=Seedling, CU=Cuttings, ST=Stumps, S=Sites, T=Trees, R=Ramets, G=Gallons, STA=Stations)

HERBICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
2,4-D	123	108
Azulam	27	7
Diphenamid	552	284
Chlorothal	10	1
Glyphosate	44	92
Simazine	211	48
Dalthal	1,985	145
Dichlobenil	350	3
DCPA	1,395	145
Atrazine	1	GH
Methyl Bromide	3,600	8
	124	GH
EPTC 7-E	210	85
Trifluralin	80	80
Valpar	40	40
Tok-E-25	250	45
Mineral Spirits	3,750	10
Prometryn	40	40
Maintain CF-125	16	20
Amitrole	12	2
Stoddard Solvent	2,590	16
Paraquat	12	4
Dalapon	8	60
INSECTICIDES		
Malathion	1	24
	21	GH
	33	2,000R
	1	5T
Carbofuran	1,111	330T
	1,581	7,580T
Kelthane	1	GH
Lindane	1	GH
Acephate	22	13T
Guthion	20	10
	7,809	38,093R
Chlordane	15	GH
Allyl Alcohol	10	GH
Endrin	7	1 & 694S
Dimethoate	123	15,660R
Thiodan	1	520R
Sevin	20	1,500R
Disulfoton	405	150R

****

1/ Amounts shown in pounds unless otherwise noted.
2/ Units shown in acres unless otherwise noted.

FY 1977 FUNGICIDE USE FOR

NURSERY/SEED ORCHARD (Cont'd)

(GH=Greenhouse, M=Miles, SD=Seed, SDL=Seedling, CU=Cuttings, ST=Stumps, S=Sites, T=Trees, R=Ramets, G=Gallons, STA=Stations)

FUNGICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Benomyl	94	20
	1	20,520SDL
Methyl Bromide & Chloropicrin	21,170	105
Benlate	101	40
	3	3,000SDL
	1	GH
Captan	512	90
	1	3,000S
	1	GH
	15	22,000SDL
Dexon	2	1
Banrot	8	1
Ferbam	921	35
	1	GH
Brozone	3,113	9
Maneb	160	67
Chlorothalonil	108	33
Thiram	34	7
	7	4,571SDL
Fenamilosulf	10	1
Borax	10	100ST
Chloropicrin	3,650	12
Vorlix	3,850	912
Methyl Bromide	13,196	33
Dazomet	8	1
ALGACIDES		
Copper Sulfate	1	4GH
Algacide Type I	52	4GH

****

1/ Amounts shown in pounds unless otherwise noted.
2/ Units shown in acres unless otherwise noted.

FY 1977 HERBICIDE USE FOR
RANGE IMPROVEMENT & WEED CONTROL

(M=Miles, S=Sites)

HERBICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
2,4-D	21,546	9,686
	390	101M
2,4-D & Dicamba	2,472	790
	6	16M
2,4-D & Picloram	1,897	1,170
2,4-D, Dicamba & Picloram	78	75
Dicamba	898	812
Picloram	2,518	2,026
	7	18M & 3S
Picloram & Potassium	1	12
Picloram & Disodium Tetraborate	21,652	515
Picloram & Borate	1,039	11
Picloram, Glyphosate & Simazine	7	15
2,4,5-T	1,450	502
Ammonium Sulfamate	420	5
Glyphosate	587	302
Dalapon	185	466
Silvex	724	371
Karbutilate	211	252
Amitrole	83	93
MCPA	350	172
Diuron	4	1
Simazine	30	13
Boralin	2	2
Copper Sulfate	119	94
Diquat	60	6
Endothall	133	14
INSECTICIDES		
Malathion	404	5,184
Trichlorfon	2,425	9,700

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1/ Amounts shown in pounds unless otherwise noted.
2/ Units shown in acres unless otherwise noted.

FY 1977 HERBICIDE USE FOR

WILDLIFE MANAGEMENT

HERBICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
AMS	37	52
Bromacil	6	1
Cacodylic Acid	78	275
Picloram	1,718	879
2,4-D	1,413	939
2,4-D & Picloram	825	369
2,4,5-T	102	127
2,4,5-TP	113	50

FUELBREAKS

HERBICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
2,4-D	4,615	1,303
2,4-D & Dicamba	90	20
Picloram	30,323	459

****

1/ Amounts shown in pounds unless otherwise noted.
2/ Units shown in acres unless otherwise noted.

FY 1977 HERBICIDE USE FOR

AGRONOMIC CROPS

HERBICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Atrazine	74	88
Diuron	10	3
Linuron	39	39
Fluometuron	28	8
2,4-D	184	164
Dalapon	33	5
DCPA	30	3
Trifluralin	320	12
INSECTICIDES		
Sevin	180	39
Carbaryl	3	3
Thuricide	5	36
Diazinon & Methoxychlor	74	49
FUNGICIDES		
Maneb	108	36
Benomyl	72	36
Anilazine	72	36

****

1/ Amounts shown in pounds unless otherwise noted.

2/ Units shown in acres unless otherwise noted.

FY 1977 HERBICIDE USE FOR
MISCELLANEOUS
(f^2=Square Feet, SP=Soil Plots, PO=Posts, MP=Miles of Post, T=Trees, M=Miles)

HERBICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Simazine	595	260
Pramitol	10	2M
2,4,5-T	84	41
Diuron	30	1
Borax	7	30
Atrazine	4	2
2,4-D	5	10
	1	1 & 340T
Dicamba	46	5.1
Ureabor	2	400f^2
Prometon	40	1
Maintain 3	4	3
MBR	72	SP
Glyphosate	.56	.12
Amitrol-T	.22	1
Amitrole	101	13
Silvex	84	32
Dalapon	72	9
2,4,5-TP	22	6
2,4-D & 2,4-DP	2.6	.1
Picloram & EL 103	3.7	.1
Tebuthiron	.4	.25
FUNGICIDES		
Pentachlorophenol	110	1MP

****

1/ Amounts shown in pounds unless otherwise noted.
2/ Units shown in acres unless otherwise noted.

FY 1977 HERBICIDE USE FOR

RIGHTS-OF-WAY
(M=Miles, G=Gallons, P=Poles)

HERBICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Picloram	374	129
2,4-D & Picloram	4,063	1,281
2,4-DP & 2,4-D	268	266
2,4-D & Dicamba	90	32
	66	8M
2,4-D	5,924	22,517M
	3,099	1,630
Atrazine	873	148
Simazine	1,472	288
	696	68M
	.6	150P
Atrazine & Simazine	84	12
Glyphosate	10	3
Ureabor	853	2
Diuron	579	129
Krovar I	10	20
Weedone 170	896	217M
Amitrole	104	95
2,4,5-T	1,406	428
2,4,5-T & 2,4-D	2,533	245
Dicamba	532	283
Amchem 170	4	9
Dalapon	210G	60
Silvex	15G	60
Bromacil	594	90
	20G	60
Propazine	28	14
Dalapon & TCA	880	40
Dichlobenil & 2,4,5-T	1,050	135
2,4,5-T & Picloram	219	73

****

1/ Amounts shown in pounds unless otherwise noted.
2/ Units shown in acres unless otherwise noted.

FY 1977 INSECTICIDE USE FOR

NUISANCE INSECTS
(G=Gallons, BLDG=Building, OZ=Ounces)

INSECTICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Carbaryl	1	3
Malathion	8	65
Mirex	112	522
Chlordane	500	85
Methyl Bromide	6	3
Diazinon	50	12
	.5G	1BLDG
Gardona	24	40
Boric Acid	2	1BLDG
Kepone	2OZ	1BLDG
Insecticide Oil	45	15

LIVESTOCK
(G=Gallons, RS=Rubbing Stations, H=Head)

INSECTICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Ciodrin	450	9,000
Coumaphos	15G	3,400
	6	15RS
Pyrethrins	.02	12H
Methoxychlor	5	165H

DEFOLIATORS
(GH=Greenhouse, SDL=Seedlings)

INSECTICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Carbaryl	328,868	328,868
	1	3,000SDL
	6	GH

****

1/ Amounts shown in pounds unless otherwise noted.

2/ Units shown in acres unless otherwise noted.

FY 1977 INSECTICIDE USE FOR

BARK BEETLES
(T=Trees)

INSECTICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Lindane	50	275
	414	15,460T
Carbaryl	80	158
	327	1,006T
Acephate	2,000	4,000
Dursban	1	11T
Chlorpyriphos	30	440T
Carbofuran	26	110T
Phosmet	7	180T
Fenotrothion	6	180T
EDB	119	3,350T
BHC	1,557	425 & 320T

TWIG BUD STEM FEEDERS
(T=Trees, SDL=Seedlings)

INSECTICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Carbaryl	14	15
Dimethoate	4	3
	100	500T
Lindane	1	1
	312	7,150T
Dursban	2	70
Aldicarb	13	1
Diazinon	87	13
Malathion	5	2
	11	17 & 3,000SDL

****

1/ Amounts shown in pounds unless otherwise noted.
2/ Units shown in acres unless otherwise noted.

FY 1977 RODENTICIDE USE FOR

VERTEBRATE CONTROL

(MS=Miles of Stream, SD=Seed, STA=Station, S=Sites, RM=Rooms, CPS=Capfuls)

RODENTICIDES	POUNDS ACTIVE INGREDIENT 1/	UNITS TREATED 2/
Warfarin	2	1RM
	15	32STA
	10	110S
Strychnine	1,897	10,474
Zinc Phosphide	44	1,940
M-44	17CPS	10,240
D-Con	3	4STA
PISCICIDES		
Rotenone	9,230	3,624
	1	14MS
Antimycin	2	230
REPELLANTS		
ZIP	573	333
BGR	888	1,077
Arasam 42-S	508	2,900
	351	5,175S

****

1/ Amounts shown in pounds unless otherwise noted.
2/ Units shown in acres unless otherwise noted.

III F.

PLANS FOR IMPLEMENTING CORRECTIVE ACTION AND RECOMMENDATIONS FOR NEW LEGISLATION

PLANS FOR IMPLEMENTING CORRECTIVE ACTION AND RECOMMENDATIONS FOR NEW LEGISLATION

The Resources Planning Act requires annual report submission by the Secretary of Agriculture at the time of submission of the annual fiscal budget. Then, the fiscal year began July 1 and ended June 30. Since the time of enactment, however, the fiscal year timing has changed to occur from October 1 until September 30. This change of timing has caused some difficulty in the reporting and compiling of accomplishment information by early January, the normal annual fiscal budget submission time. A complete evaluation of the program hinges upon a sound complete accomplishment base.

Because of the change in timing of fiscal year, we are proposing to modify the reporting date requirement to February 15 of each year. This change will allow us enough lead time to collect the year's accomplishment, synthesize the data, and conduct meaningful analysis.

IV. APPENDIX

APPENDIX

A. NATIONAL FOREST SYSTEM

1. RECREATION AND WILDERNESS MANAGEMENT
2. WILDLIFE AND FISHERIES MANAGEMENT
3. RANGE MANAGEMENT
4. TIMBER MANAGEMENT
5. WATERSHED MANAGEMENT
6. MINERALS AREA MANAGEMENT
7. PROTECTION
8. LANDS MANAGEMENT
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APPENDIX

PART A.

NATIONAL FOREST SYSTEM

APPENDIX A-1 -- RECREATION AND WILDERNESS MANAGEMENT

MANAGEMENT OF DISPERSED RECREATION USE

A working document was prepared to guide preparation of Visitor Information Service programs, help train public contact personnel, and assist National Forest visitors in becoming aware of and enjoying the variety of dispersed recreation opportunities available in the National Forest. In addition, a planning workbook was prepared to aid field managers in using Visitor Information Service as a tool to help manage dispersed recreation use.

WILDERNESS MANAGEMENT

During FY 1977 five areas were designated by Congressional action as Wilderness. Those areas are:

Area/PL#	Forest	State	Date	Acres
Alpine Leaves 94-357	Mt Baver Snoqual Wenatch	Washington	7/12/76	303,508
Eagles Nest 94-352	Arap/Roos/ White River	Colorado	7/12/76	133,910
Fitz Patrick 94-559	Shoshone	Wyoming	10/19/76	(197,600)
Fitz (Revised) 94-567	Shoshone	Wyoming	10/20/76	191,103
Kaiser 94-557	Sierra	California	10/19/76	22,500
Hercules/Glades 94-557	Mark Twain	Missouri	10/19/76	12,315
	Total			663,336

TRAILS MANAGEMENT

National Recreation Trails--Nine national Recreation trails were designated. Three trails are in the interagency review process for designation. There are now 14 National Recreation Trails within the National Forests.

National Scenic Trails--Work is progressing to secure and develop National Forest portions of the Appalachian and Pacific Crest National Scenic Trails.

	Within National Forests	
	Miles to standard	Miles inadequate
Appalachian	647	103
Pacific Crest Trail	1,100	859

OFF-ROAD VEHICLE MANAGEMENT

Executive Orders 11644 and 11989 have directed all Federal Agencies to control off-road vehicle (ORV) use on public lands. In compliance with these orders, National Forest ORV regulations and policies have been developed to minimize resource damage and user conflicts, and promote the safety of all users.

The initial phases of ORV management planning have been completed on all National Forest System lands. Formal ORV plans have been completed on all or portions of 150 National Forests. The remaining four Forests have implemented actions to provide for interim ORV management until their Land Management Plans are completed in 1978. As of January 1, 1978, the status of National Forest lands in relation to ORV management is:

A. 115,910,000 acres open to ORV use
B. 31,273,000 acres restricted to specific vehicles or seasons of use
C. 40,712,000 acres closed to all ORV use (includes wilderness areas)

At the present time, a significant portion of the area shown as open to ORV use cannot be used by ORV's due to inaccessibility, topography, vegetation, or other physical barriers.

ROADLESS AREAS REVIEW AND EVALUATION (RARE II)

In 1977 the Forest Service held 227 RARE II workshops nationwide with over 17,000 persons attending. The public was asked to assist in identifying roadless areas and developing additional criteria for evaluating possible Forest Service contributions to the National Wilderness Preservation System (NWPS).

The RARE II inventory was published November 18, 1977, in the Federal Register. Approximately 65.7 million acres in 1,920 areas were identified by the Forest Service as roadless and undeveloped and having wilderness potential. These areas are being evaluated at the present time.

RARE II will provide the Forest Service with the necessary data on which to base recommendations as to which areas within the National Forest System should be proposed to help round out the National Wilderness Preservation System equally important, areas will be identified which need not be considered further for wilderness.

BEVERAGE CONTAINERS

The Forest Service has implemented the EPA solid waste management guidelines for beverage containers. These guidelines require that Federal facilities establish a system for the return of beer and soft drink beverage containers. In all instances where Federal facilities sell beverages for off-site consumption, the dealer will collect and refund deposits on all containers.

SKI AREA PRICE EVALUATION STUDY

A contract study entitled Ski Area Price Evaluation Study was completed. The objective of the study was to determine if competitive forces are operating in a way that provides acceptable standards of service to the public at prices which are reasonable and just. The decision was made to test some of the procedures described in the study during the 1977-78 season for possible application in the 1978-79 season. The proposed procedures, after clearance in OMB, were published in the Federal Register on December 5, 1977. Preliminary direction has gone to the field and data collection has started. Evaluation of data will take place in April and May.

GRFS UPDATE

Concessioners occupying National Forest lands for the purpose of providing commercial facilities and services to recreation visitors are charged a fee for the privilege, based on a graduated system which recognizes investment and gross revenue. Responding to concerns expressed by field offices and concessioners, the Forest Service undertook a study of the Graduated Rate Fee System with the objective of simplifying and updating the system and improving the procedures used in computing the fee for the use of National Forest lands. The first stage of the study was completed in FY 1977 and work is continuing, with revised regulations and directives to be prepared and issued in FY 1978.

LANDSCAPE MANAGEMENT

Two more chapters in the National Forest Landscape Management series were published in 1977. These handbooks provide a vocablary, planning and objective-setting process, and practical ideas for application of design principles to land management activities.

"Chapter 3, Range," published in May, offers design ideas for acceptable manipulation of forage vegetation and installation of range improvement structures.

"Chapter 4, Roads," published in March, offers methods of reducing the visual impacts of roads so that they "lay lightly upon the land."

In addition, a publication on Land Use Planning Simulation has been completed. This document illustrates methods of preparing and projecting upon a screen realistic simulations of the visual impacts of proposed ski areas, power lines, surface mining, etc. Its usefulness has been demonstrated in public involvement meetings where large groups could see and react to various alternatives.

TABLE A-1 -- NATIONAL FOREST RECREATION

STATE SUMMARY OF RECREATION USE
SUMMARY OF ACTIVITIES CY 1977
(Thousands of Visitor-Days of Recreation Use) 1/

STATE NAME	CAMPING	PICNICKING	RECREATION TRAVEL (MECHANIZED)	BOATING	GAMES & TEAM SPORTS	WATERSKIING AND OTHER WATER SPORTS	SWIMMING AND SCUBA DIVING	WINTER SPORTS	FISHING	HUNTING
ALABAMA	199.1	69.0	339.8	38.4	.6	11.0	80.8		90.4	209.2
ALASKA	332.1	64.7	319.6	435.7	9.5	1.3	16.3	100.6	330.7	170.8
ARIZONA	3,335.5	710.5	3,844.1	533.9	79.4	89.1	289.8	79.1	579.6	619.7
ARKANSAS	587.4	149.9	438.4	140.7	2.4	27.6	207.8		354.2	470.0
CALIFORNIA	12,583.8	1,329.1	12,989.1	684.3	513.7	138.3	1,249.7	2,200.9	2,730.8	1,238.3
COLORADO	4,480.6	675.5	4,213.6	132.4	22.0	10.0	31.5	2,251.9	1,454.6	858.8
FLORIDA	1,137.2	317.6	247.0	204.6	5.1	47.2	251.1		374.2	457.4
GEORGIA	522.6	61.1	432.3	50.3	4.6	26.3	23.4	2.2	190.8	285.2
IDAHO	2,616.2	369.5	2,206.6	279.3	36.3	30.4	351.9	240.8	978.0	747.8
ILLINOIS	539.3	245.0	279.5	124.8	.7	5.2	165.4		52.7	225.4
INDIANA	164.2	29.6	225.5	98.4		26.7	42.5		122.5	105.7
KANSAS	1.2	8.6	18.9	.2	.1		.1	.1	.6	11.6
KENTUCKY	326.0	113.3	685.3	326.5	4.5	61.6	39.0		215.3	178.3
LOUISIANA	131.9	35.8	78.6	12.7	2.7	5.0	34.7		51.7	120.4
MAINE	16.6	3.7	14.9	.2	.7		6.1	13.9	4.0	8.2
MICHIGAN	956.4	128.8	2,329.7	253.7	10.8	8.7	127.3	174.1	380.2	680.5
MINNESOTA	1,127.0	59.4	663.0	598.0	12.0	28.3	111.9	84.1	669.3	239.7
MISSISSIPPI	134.6	46.2	186.6	31.5	1.9	2.9	58.2		47.1	385.4
MISSOURI	341.1	84.0	388.7	108.7	7.8	36.1	70.6		90.3	185.1
MONTANA	1,632.9	330.7	2,112.5	151.6	26.6	33.4	62.1	362.8	695.2	700.9
NEBRASKA	26.6	23.3	15.0	1.6	2.6	.1	2.1		7.3	26.5
NEVADA	518.3	149.6	313.2	1.0	19.6	.2	59.2	96.2	77.5	111.3
NEW HAMPSHIRE	732.3	77.5	371.9	4.7	1.8	.3	53.1	302.3	20.0	28.0
NEW MEXICO	1,463.0	488.2	816.0	24.6	24.5	.1	30.6	266.4	328.6	464.7
NEW YORK	11.3	3.1	7.0					.1	2.5	10.0
NORTH CAROLINA	696.2	218.1	1,090.0	109.6	8.7	13.0	82.9	1.3	194.4	464.8
NORTH DAKOTA	12.4	7.0	24.6	1.9	.1		1.4	1.6	7.5	50.8
OHIO	31.8	23.2	64.5	7.6	2.7	.4	9.8	.4	21.0	98.7
OKLAHOMA	50.5	28.1	232.0	15.9		2.1	12.2		31.4	63.6
OREGON	5,231.4	621.9	3,434.6	609.5	36.7	67.7	298.0	449.9	1,260.6	1,116.1
PENNSYLVANIA	546.0	36.3	309.4	76.5	1.3	6.2	26.0	1.6	254.6	423.6
SOUTH CAROLINA	131.7	46.9	234.1	57.5	12.7	12.5	10.7		70.7	196.9
SOUTH DAKOTA	346.4	83.5	1,427.6	32.6	8.7	6.1	49.8	22.4	93.4	77.9
TENNESSEE	463.3	157.4	316.1	67.8	8.5	25.2	93.9	.1	125.1	191.9
TEXAS	363.6	41.0	209.8	68.3		20.3	44.9		864.8	152.1
UTAH	3,432.4	638.2	2,440.8	191.8	68.4	22.5	80.5	385.4	1,240.5	689.2
VERMONT	68.9	13.5	67.0	3.2	1.6		2.5	342.7	7.9	36.0
VIRGINIA	675.8	139.7	908.1	17.0	14.8	1.5	53.1	1.6	275.5	548.3
WASHINGTON	3,972.0	346.8	2,648.8	195.2	38.2	18.8	100.0	555.3	742.0	883.7
WEST VIRGINIA	690.7	52.7	321.8	24.3	11.7		39.8	.3	232.2	231.1
WISCONSIN	453.3	25.6	662.4	100.2	.2	9.4	86.0	18.0	215.3	271.7
WYOMING	1,586.3	155.8	1,381.6	123.6	20.3	7.3	23.6	160.3	544.1	481.7
PUERTO RICO	2.0	107.3	15.4		3.5		41.9			
SERVICEWIDE	52,671.9	8,316.7	49,325.4	5,940.3	1,028.0	802.8	4,422.2	8,116.4	16,029.1	14,517.0

1/ Recreation use of National Forest land and water which aggregates 12 person-hours may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

TABLE A-1 -- Continued

HIKING & MOUNTAIN CLIMBING	HORSEBACK RIDING	RESORT USE	ORGANIZATION CAMP USE	RECREATION RESIDENCE USE	GATHERING FOREST PRODUCTS	NATURE STUDY	VIEWING SCENES, SPORTS ENVIRONMENT	VIS. (EXHIBITS, TALKS, ETC)	TOTAL USE	PERCENT OF TOTAL
33.3	15.8				28.0	12.1	2.8	14.1	1,144.4	.6
120.6	2.6	6.3	8.9	30.3	10.9	7.0	16.4	212.7	2,197.0	1.1
598.4	221.7	273.1	279.8	428.0	176.1	94.8	359.5	229.6	12,821.7	6.3
83.0	38.0	13.9	17.8	8.5	31.4	13.1	186.3	86.3	2,856.7	1.4
2,058.9	431.7	1,160.8	1,726.0	3,401.0	420.2	291.3	1,859.9	527.8	47,535.6	23.2
1,203.7	355.9	337.3	191.3	262.9	176.0	141.8	1,047.7	186.6	18,034.1	8.8
47.7	30.2		45.6	136.6	28.9	16.6	55.1	31.2	3,433.3	1.7
187.4	18.7		16.2	16.5	7.2	7.5	78.2	38.8	1,969.3	1.0
321.4	198.6	162.9	156.7	302.9	240.1	35.7	181.1	199.5	9,655.7	4.7
66.0	71.8				7.1	9.3	79.4	31.0	1,902.6	.9
44.1	46.1				23.3	12.5	57.8	12.9	1,011.8	.5
.9	.2				.1	5.1			47.7	
214.9	31.8	6.5	11.2	11.2	14.0	8.8	104.0	83.0	2,435.2	1.2
22.5	7.1		13.2	25.6	14.6	3.1	6.9	40.7	607.2	.3
6.4	.5	6.3	1.0		.3	2.2	3.5	.8	89.3	
108.8	32.4	3.2	17.3	94.1	66.4	45.4	66.6	61.3	5,545.7	2.7
61.2	5.4	84.5	130.0	150.0	35.0	47.1	20.1	54.1	4,180.1	2.0
20.3	14.4		41.7		8.8	3.2	5.4	8.8	997.0	.5
57.6	21.7		20.5		16.8	6.5	29.1	14.3	1,478.9	.7
373.3	217.4	122.1	92.3	255.6	113.5	36.5	187.0	277.2	7,783.6	3.8
10.6	1.7		11.3		8.4	9.0	3.5	11.1	160.7	.1
71.1	58.0	7.4	42.7	21.4	53.2	9.5	17.5	205.2	1,832.1	.9
817.7	.8	74.4	2.4		4.9	23.5	476.0	35.6	3,027.2	1.5
357.8	104.7	25.2	60.8	120.9	289.5	26.8	231.9	121.2	5,245.5	2.6
2.0	1.5				.5	1.5		.2	39.7	
236.9	26.8	6.5	1.0	6.8	52.7	19.1	240.5	96.4	3,565.7	1.7
2.0	3.0				2.1	.4	11.0	2.0	127.8	.1
13.8	10.3				9.8	2.1	.2	18.9	315.2	.2
19.8	3.9				3.4	2.8	21.1	22.1	508.9	.2
714.5	169.5	693.6	216.5	411.6	274.5	94.2	639.5	318.2	16,658.5	8.1
34.1	8.4	1.6	20.0	52.8	23.1	7.9	129.6	15.9	1,974.9	1.0
27.1	15.8		.1	.1	19.3	10.0	8.9	14.1	869.1	.4
48.0	23.0	69.8	46.2	65.7	11.5	16.1	30.1	29.5	2,488.3	1.2
120.6	18.3	24.0	29.6	78.8	16.1	6.6	97.6	23.4	1,864.3	.9
16.3	6.6	23.0			2.3	8.6	39.4	15.2	1,876.2	.9
455.3	226.6	454.5	179.4	285.7	121.9	41.7	290.2	97.0	11,342.0	5.5
31.3	1.3	40.2	18.4	1.2	1.1	1.2	17.3	1.6	656.9	.3
194.2	58.2	1.5	44.6	.6	46.4	19.6	236.2	34.0	3,270.7	1.6
982.5	221.3	196.1	234.4	446.2	346.9	95.3	971.7	172.2	13,167.4	6.4
87.5	6.2		43.7	.7	9.4	6.7	23.7	47.1	1,829.6	.9
28.2	5.8	2.7	1.5	9.4	54.1	4.7	5.8	16.6	1,970.9	1.0
330.2	149.9	380.8	101.8	197.3	40.8	31.2	114.6	64.6	5,895.8	2.9
26.3		9.0	31.5	4.0	2.0	1.9	20.4	117.9	383.1	.2
10,258.2	2,883.6	4,187.2	3,855.4	6,826.4	2,812.6	1,240.0	7,973.5	3,590.7	204,797.4	100.0

TABLE A-2 -- NATIONAL FOREST RECREATION

STATE SUMMARY OF RECREATION USE
PART I - USE OF DEVELOPED RECREATION SITES (Thousands of Visitor-Days of Recreation Use) 1/
CALENDAR YEAR 1977

STATE NAME	OBSERV. SITE	PLAY, PARK, SPORTS	BOATING SITE	SWIMMING SITE	CAMP-GROUNDS	PICNIC GROUNDS	HOTEL, LODGE, RESORTS	ORGANI-ZATION SITES	OTHER CONC. SITES 2/	RECN RES. SITES 3/	WINTER SPORTS SITES	DOC. SITES 4/	INTERP-RETIVE SITES	TOTAL USE	PERCNT OF TOTAL
ALABAMA			4.4	71.0	169.8	12.3							6.9	264.4	.4
ALASKA	2.3	7.3	1.1		333.2	59.6	6.4	12.9		30.3	67.6		164.1	684.8	.9
ARIZONA	49.3	45.7	212.9	59.4	2872.7	527.4	342.3	364.3	44.7	428.0	32.2	1.3	62.2	5042.4	6.8
ARKANSAS	24.8		5.7	94.9	436.8	78.5	13.9	27.7		8.5			33.6	724.4	1.0
CALIFORNIA	47.6	242.7	200.0	330.9	8172.8	981.4	1177.1	2275.3	154.3	3419.2	1705.0	.6	201.7	18908.6	25.6
COLORADO	74.1	1.7	39.4		3145.0	483.2	207.2	223.3	183.6	263.4	2148.5	18.3	49.7	6837.4	9.3
FLORIDA			50.8	126.7	808.4	288.3		80.0		136.6		3.0	16.7	1510.5	2.0
GEORGIA	14.9		13.7	16.1	346.0	44.0		28.8		16.5			18.6	498.6	.7
IDAHO	28.9	1.5	133.0	27.9	1617.5	171.2	165.3	203.2	10.1	311.8	157.1	33.0	123.5	2984.0	4.0
ILLINOIS	32.3		97.1	161.5	448.4	223.3						9.2	7.6	979.4	1.3
INDIANA	.3		22.0	26.4	125.6	21.5							4.9	200.7	.3
KANSAS						6.6								6.6	
KENTUCKY	65.0	.2	66.0	9.3	294.1	94.1		14.4		11.2		.3	3.7	558.3	.8
LOUISIANA	2.1		6.3	47.2	115.9	9.1		16.4		25.6			31.5	254.1	.3
MAINE	2.4				16.8	2.2		1.2			31.2			53.8	.1
MICHIGAN	31.2	4.5	125.1	94.1	719.3	121.9	2.5	26.5	.8	94.1	137.3	4.8	15.0	1377.1	1.9
MINNESOTA	1.9		79.7	48.5	560.3	54.3	121.4	231.1	2.9	150.0	37.6	.6	2.1	1290.4	1.7
MISSISSIPPI			10.0	68.7	78.7	24.5		46.1					1.9	229.9	.3
MISSOURI	3.5	1.0	20.9	7.3	258.4	83.9		25.6				.3	1.3	402.2	.5
MONTANA	15.6		73.7	30.9	1247.6	159.5	93.3	120.4	1.1	265.0	297.5		101.3	2405.9	3.3
NEBRASKA	.1			1.3	19.1	20.6		19.0				.1		60.2	.1
NEVADA	2.3	23.3		43.2	446.6	65.6		46.5		21.7	54.9		20.3	724.4	1.0
NEW HAMPSHIRE	98.2		8.6	25.9	583.9	56.1	79.4	3.2			281.9		21.0	1158.2	1.6
NEW MEXICO	77.6		38.5		1132.9	285.1	5.0	71.9	29.8	120.9	207.1	8.2	56.9	2033.9	2.8
NEW YORK					8.2	3.0								11.2	
NORTH CAROLINA	109.5		50.1	76.2	540.0	250.5	13.4	1.0		6.8		.5	42.6	1090.6	1.5
NORTH DAKOTA					14.3	.7								15.0	
OHIO			.4	7.5	23.4	16.8							.7	48.8	.1
OKLAHOMA	21.0		6.2	9.1	34.6	20.2							4.9	96.0	.1
OREGON	155.1	4.0	321.4	50.7	4103.6	487.3	823.6	303.1	100.3	409.7	360.2	7.7	99.6	7226.3	9.8
PENNSYLVANIA	42.6	.1	25.1	31.6	454.5	11.5		35.6		52.8			4.4	658.2	.9
SOUTH CAROLINA		9.3	6.6	11.9	109.1	47.6		2.6		.1		.3	1.5	189.0	.3
SOUTH DAKOTA	21.8	2.1	20.7	22.6	361.1	70.8	5.5	57.0	71.9	65.7	7.2		3.8	710.2	1.0
TENNESSEE	53.9	3.2	12.8	67.5	369.9	155.5	25.7	41.8	2.8	78.8		.1	12.8	824.8	1.1
TEXAS	.3		27.0	35.8	229.7	42.5	14.7		19.6				2.9	372.5	.5
UTAH	32.7	3.7	88.5	35.1	2384.2	293.2	470.1	224.8	12.0	282.1	373.1	.3	25.5	4225.3	5.7
VERMONT	3.3	1.7		6.5	53.5	7.0	4.4	8.4		1.2	387.5		1.3	474.8	.6
VIRGINIA	16.4	2.7	6.5	52.8	401.7	90.2	.2	62.9	1.7	.6		.6	22.9	659.2	.9
WASHINGTON	47.2		64.1	19.2	2607.9	121.6	266.2	307.1	5.6	446.2	470.1	.4	14.7	4370.3	5.9
WEST VIRGINIA	13.3		5.9	29.3	429.8	47.3		69.6		.7		3.3	2.2	601.4	.8
WISCONSIN			49.9	48.5	415.5	14.9	2.5	1.1	.9	9.4	10.7		5.7	559.1	.8
WYOMING	19.7		53.5	11.7	1063.5	63.7	344.5	142.4	5.5	197.3	203.6	.7	32.6	2138.7	2.9
PUERTO RICO	30.4					129.3		58.2	9.0	4.0			83.5	314.4	.4
SERVICE-WIDE	1141.6	354.7	1947.6	1807.2	37554.3	5747.8	4184.6	5153.4	656.6	6858.2	6970.3	93.6	1306.1	73776.0	100.0

1/ Recreation use of National Forest land and water which aggregates 12 person-hours may entail one person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.
2/ Other Concession Sites
3/ Recreation Residence Sites
4/ Document Sites

TABLE A-3 -- NATIONAL FOREST RECREATION

STATE SUMMARY OF RECREATION USE
USE OF DISPERSED RECREATION AREAS Thousands of Visitor-Days of Recreation Use 1/
CALENDAR YEAR 1977

STATE NAME	ROADS	TRAILS	LAKES,PONDS	RESER-VOIRS	RIVERS, STREAMS	OCEANS, GREAT LAKES	GENERAL UNDEVELOPED AREA	TOTAL USE	TOTAL USE DEVELOPED & DISPERSED	2/ RECREATION DAYS
ALABAMA	364.7	9.0	21.8	83.8	66.6		334.1	880.0	1,144.4	3,536,399
ALASKA	309.1	114.0	123.1	1.2	105.8	679.2	179.8	1,512.2	2,197.0	11,330,331
ARIZONA	3,786.6	698.6	4.7	937.9	350.7		2,000.8	7,779.3	12,821.7	42,951,190
ARKANSAS	404.1	60.5		433.9	222.1		1,011.7	2,132.3	2,856.7	10,060,888
CALIFORNIA	12,423.5	2,064.5	741.8	1,582.9	1,980.7		9,833.6	28,627.0	47,535.6	296,210,591
COLORADO	4,308.0	1,440.8	348.3	528.2	655.6		3,915.8	11,196.7	18,034.1	90,234,626
FLORIDA	274.4	28.2	549.9	12.0	175.7		882.6	1,922.8	3,433.3	8,655,099
GEORGIA	447.7	208.5		101.3	172.3		540.9	1,470.7	1,969.3	5,984,705
IDAHO	2,080.3	445.3	499.9	295.9	742.1		2,608.2	6,671.7	9,655.7	35,561,844
ILLINOIS	254.0	74.8	.9	84.9	29.1		479.5	923.2	1,902.6	6,762,321
INDIANA	265.1	26.7		198.3	56.4		264.6	811.1	1,011.8	3,263,176
KANSAS	19.1			1.5			20.5	41.1	47.7	371,993
KENTUCKY	775.3	135.3		419.0	172.9		374.4	1,876.9	2,435.2	9,206,246
LOUISIANA	81.0	19.0		46.8	29.5		176.8	353.1	607.2	2,495,423
MAINE	11.3	6.9	2.3	.8	2.4		11.8	35.5	89.3	273,784
MICHIGAN	2,124.1	166.7	342.2	23.2	284.2	1.4	1,226.8	4,168.6	5,545.7	15,004,527
MINNESOTA	574.7	94.7	1,156.8	5.1	177.6		880.8	2,889.7	4,180.1	10,751,248
MISSISSIPPI	194.7	15.3	4.4	35.1	58.7		458.9	767.1	997.0	2,703,994
MISSOURI	402.6	46.0	.1	75.3	185.9		366.8	1,076.7	1,478.9	4,259,698
MONTANA	2,028.5	553.1	249.1	195.3	422.7		1,929.0	5,377.7	7,783.6	23,287,472
NEBRASKA	21.2	3.6		9.5	.5		65.7	100.5	160.7	954,189
NEVADA	489.4	90.4	8.3	2.2	79.2		438.2	1,107.7	1,832.1	8,128,638
NEW HAMPSHIRE	514.2	882.6	8.5	2.0	43.6		418.1	1,869.0	3,027.2	12,247,353
NEW MEXICO	815.2	237.0	24.0	114.7	189.2		1,831.5	3,211.6	5,245.5	16,601,687
NEW YORK	5.5	5.0		3.0			15.0	28.5	39.7	105,315
NORTH CAROLINA	1,080.6	187.1	6.4	131.4	205.9		863.7	2,475.1	3,565.7	13,747,043
NORTH DAKOTA	30.4			8.5	4.6		69.3	112.8	127.8	418,279
OHIO	64.8	2.2		15.9	19.0		164.5	266.4	315.2	974,170
OKLAHOMA	231.6	10.8		32.9	13.3		124.3	412.9	508.9	2,095,095
OREGON	3,462.4	572.4	604.8	404.2	866.5		3,521.9	9,432.2	16,658.5	43,173,111
PENNSYLVANIA	388.0	18.6		114.5	176.6		619.0	1,316.7	1,974.9	5,583,442
SOUTH CAROLINA	241.9	22.8	.2	57.6	90.8		266.8	680.1	869.1	2,726,080
SOUTH DAKOTA	1,407.5	13.4		123.1	32.1		202.0	1,778.1	2,488.3	20,182,962
TENNESSEE	299.6	130.3		96.7	154.9		358.0	1,039.5	1,864.3	5,921,811
TEXAS	222.3	11.0	.8	950.7	19.8		299.1	1,503.7	1,876.2	4,996,722
UTAH	2,499.8	503.7	230.7	773.3	477.1		2,632.1	7,116.7	11,342.0	37,353,770
VERMONT	74.3	26.2	3.8	1.5	7.9		68.4	182.1	656.9	1,930,415
VIRGINIA	1,037.9	200.0		94.8	204.8		1,074.0	2,611.5	3,270.7	11,290,158
WASHINGTON	3,342.6	958.8	385.0	104.4	488.5	2.7	3,515.1	8,797.1	13,167.4	34,041,384
WEST VIRGINIA	338.3	83.3	.6	50.6	206.4		549.0	1,228.2	1,829.6	4,540,539
WISCONSIN	587.3	58.8	270.2	12.2	80.3		403.0	1,411.8	1,970.9	5,378,602
WYOMING	1,304.8	336.2	192.7	105.3	350.6		1,467.5	3,757.1	5,895.8	24,612,388
PUERTO RICO	18.0	13.8			28.0		8.9	68.7	383.1	2,660,507
SERVICE WIDE	49,606.4	10,575.9	5,781.3	8,271.4	9,630.6	683.3	46,472.5	131,021.4	204,797.4	842,569,215

1/ Recreation use of National Forest land and water which aggregates 12 person-hours may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

2/ The Bureau of Outdoor Recreation (BOR) has used the "Recreation Day" as a common basis for displaying recreation use on Federal lands administered by the seven Federal land managing agencies. A Recreation Day is defined as the presence of one person on an area of land or water for the purpose of engaging in one or more recreation activity during all or part of a calendar day.

APPENDIX A-2 -- WILDLIFE AND FISHERIES MANAGEMENT

SIKES ACTS

Comprehensive fish and wildlife plans were prepared for National Forest System lands in 35 States. Seven State plans are underway, but not yet completed. These plans were prepared jointly by the State fish and wildlife departments and the Forest Service in response to the Sikes Act (P.L. 93-452).

ENDANGERED SPECIES

More than 60 threatened species have been identified on National Forest System lands. Inventory, planning, and habitat protection and improvement programs in response to the Endangered Species Act of 1973 are underway. Several small habitat improvement programs are in effect, and comprehensive management programs are evolving in cooperation with the Fish and Wildlife Service of the Department of the Interior and the States.

Among opportunities existing to enhance habitat for threatened and endangered wildlife and fish species is the expansion of studies to determine the habitat requirements, distribution, and future management direction for grizzly bear populations in Montana and Wyoming. Expansion of the studies for the grizzly bear within this program will directly benefit the estimated 800 surviving bears and provide needed management direction to insuring a perpetuation of the species. Management guidelines are in effect for such species as the California condor, Southern bald eagle, Red-cockaded woodpecker, Mississippi sandhill crane, American peregrine falcon, Blunt-nosed leopard lizard, and others.

WILDLIFE HABITAT-TIMBER RELATIONSHIPS

Wildlife habitat-timber relationships have been developed. The relationships are a collection of the best information available concerning the habitat needs of wildlife, related to several succession stages of representative timber types. The relationships permit ready evaluation of various timber management possibilities, and their influence on the habitat of many species of wildlife. The The method is invaluable in preparing land management plans and environmental impact statements. Originating in the Blue Mountains of Oregon and Washington as an interagency effort spearheaded by the Pacific Northwest Station and Pacific Northwest Region, the method, with modification to serve other areas, has spread to other Regions. Other Federal agencies, as well as State agencies, are adopting the method.

ANADROMOUS FISH

One of the resources whose value is often unrecognized on the National Forests is the fish resource. Conservative estimate of the production of Pacific salmon in 1977 on the National Forests in the Alaska and Pacific Northwest Regions places the annual harvest at 28 million salmon, weighing 118 million pounds. This is enough animal protein to satisfy 1,260,000 Americans annually, or a population greater than that of Utah or Maine, and approximately the population of North Dakota and South Dakota combined. Minimal annual value of the harvest is $95 million, assuming all fish taken were sold at dockside to commercial processors. Increased attention is being given to the management of this important resource.

DROUGHT IN WESTERN STATES

The drought in the western States had major impact on fish and wildlife habitat. Fish habitat was reduced as streams dried up, and waterfowl areas were also reduced. As a result of poor forage caused by the drought, big game animals went onto winter range in some areas with low fat reserves. Management attempts to mitigate these losses by hauling drinking water for wildlife and transferring fish from drying streams to others with water were of minor success.

APPENDIX A-3 -- RANGE MANAGEMENT

IMPROVED MANAGEMENT

Range management gains were registered through the National Forest System. During the year, 5,647 allotments were maintained to improved management status while improved management was started on 920 allotments. This brought the number of allotments on which improved management is being carried out to 6,567 or 59 percent of the 11,164 grazing allotments nationwide.

GRAZING USE

Grazing use of National Forest System ranges for 1977 total 11.4 million animal-unit-months, excluding use by big game and wild horses and burros. Appendix table A-4 summarizes grazing use for C.Y. 1976 (latest year of record) by adult livestock; reported animal losses due to poisonous plants, predators, and other causes are included.

RANGE REVEGETATION

In addition, 115,000 acres of range revegetation work was completed. This is a combined accomplishment from both Rangeland Management and Rangeland Improvements since both sources of funds are jointly contributing to accomplishment of individual projects.

FLPMA IMPLEMENTATION

The Federal Land Policy and Management Act of 1976 (P.L. 94-579) provided for changes in the manner in which permits are issued to authorize livestock to graze on lands of the National Forest System. During 1977, the Secretary of Agriculture's regulations were revised to authorize needed changes. The revised regulations provide for issuance of grazing permits for terms of 10 years, except that terms can be shorter than 10 years in certain situations. The regulations also provide for compensation to permittees for the adjusted value of permanent improvements constructed or placed by them, in the event the permit is canceled to devote the land to a purpose which precludes grazing. The Act and regulations provide for establishment of grazing advisory boards made up of grazing permittees where a simple majority of permittees petition the Forest Supervisor for establishment.

The Federal Land Policy and Management Act of 1976 also required the Secretaries of Agriculture and the Interior to study grazing fee situations and report to Congress. The required report, submitted October 21, 1977, proposed a revised fee procedure but would continue the policy of charging the fair market value for livestock use of public lands.

The Departments of Agriculture and Interior issued proposed grazing fees regulations for certain Federal lands administered by the Forest Service and Bureau of Land Management in the Federal Register November 23, 1977. The proposed regulations apply to grazing fees charged for 1) livestock use on public lands (excluding Alaska) administered by the Bureau of Land Management and, 2) National Forests administered by Forest Service in the eleven contiguous western States plus Nebraska and South Dakota.

TABLE A-4 -- U. S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
ANNUAL GRAZING STATISTICAL REPORT - CY 1976

NATIONAL FOREST SYSTEM
ALL REGIONS

ITEM	CATTLE NO.	CATTLE ANIMAL MOS.	HORSES NO.	HORSES ANIMAL MOS.	SHEEP NO.	SHEEP ANIMAL MOS.	TOTAL NO.	TOTAL AN.UNIT MONTHS
1 AUTHORIZED USE								
A. PAID								
(1) TERM PERMIT	1,036,770	4,721,206	2,141	11,239	1,353,189	2,925,198	2,392,100	5,192,894
(2) TEMPORARY PERMIT	202,033	821,294	13,420	20,407	173,150	329,090	388,603	878,127
(3) GRAZING AGREEMENT	178,821	986,925	1,322	11,281	20,872	146,607	201,015	995,027
(4) SPECIAL USE PASTURE	18,248	47,526	2,187	4,761	1,834	9,621	22,269	55,183
TOTAL	1,435,872	6,578,951	19,070	47,688	1,549,045	3,410,516	3,003,987	7,121,231
B. FREE USE								
(1) RECREATION STOCK	102	541	122,467	37,319			122,569	45,319
(2) OTHER	764	3,949	27,782	32,223	7,192	16,934	35,738	46,240
TOTAL	866	4,490	150,249	69,542	7,192	16,934	158,307	91,559
C. NON-FS LANDS								
(1) PRIVATE LAND PERMIT	58,464	234,631	340	2,236	62,388	97,503	121,192	253,509
(2) OTHER	25,296	22,438	86	61	131,145	4,000	156,527	23,306
TOTAL	83,760	257,069	426	2,297	193,533	101,503	277,719	276,815
TOTAL AUTHORIZED USE	1,520,498	6,840,510	169,745	119,527	1,749,770	3,528,953	3,440,013	7,489,605
2 UNAUTHORIZED USE	20,103	27,442	671	1,578	16,655	3,980	37,429	29,679
3 CROSSING	69,105	X	139	X	275,410	X	344,654	X
4 LOSSES								
A. POISONOUS PLANTS	2,296	X	3	X	4,609	X	6,908	X
B. PREDATORS	1,167	X		X	32,879	X	34,046	X
C. OTHER	10,777	X	35	X	15,405	X	26,217	X
TOTAL	14,240	X	38	X	52,893	X	67,171	X

APPENDIX A-4 TIMBER MANAGEMENT

TABLE A-5--NUMBER OF SALES, VOLUME AND VALUE OF TIMBER SOLD AND HARVESTED ON NATIONAL FOREST LAND, BY STATES, TIMBER STAND IMPROVEMENT AND AREA PLANTED AND SEEDED TO TREES

FISCAL YEAR 1977

States	Timber Sold			Timber harvested		Timber stand improvement	Area planted and seeded to trees
	No. Sales 1/	Volume-MBF 2/	Value-$	Volume-MBF 2/	Value-$	Acres	Acres
Alabama	124	66,142	$ 3,802,377	56,280	$ 2,359,026	2,118	7,676
Alaska	22	861	9,452	465,254	1,948,315	2,175	69
Arizona	5,035	171,447	13,744,342	274,533	15,802,261	61,484	5,159
Arkansas	505	200,750	10,172,542	192,004	6,779,796	16,544	14,300
California	10,010	1,598,670	189,023,726	1,902,236	159,669,147	36,453	36,756
Colorado	1,521	142,762	1,278,303	163,458	3,466,142	15,792	4,568
Florida	120	89,731	3,269,626	75,097	3,099,093	4,354	11,766
Georgia	297	51,986	2,858,663	39,501	1,146,818	1,902	5,224
Idaho	2,955	761,983	25,524,766	932,700	46,231,637	17,603	16,388
Illinois	34	4,447	35,477	6,949	110,780	1,955	1,023
Indiana	45	5,960	245,901	3,190	91,730	453	711
Kentucky	154	17,701	332,100	21,800	439,551	4,116	3,108
Louisiana	480	150,091	9,186,031	137,564	7,370,333	791	5,424
Maine	4	560	2,614	2,504	49,993	360	-
Michigan	332	149,742	1,793,840	145,381	1,494,072	9,130	4,049
Minnesota	208	99,022	926,956	108,621	853,507	9,318	9,012
Mississippi	505	197,261	14,873,430	189,373	10,710,343	4,603	7,537
Missouri	496	49,853	1,467,819	40,703	908,110	16,122	3,150
Montana	2,112	520,835	29,574,736	527,718	23,801,341	19,101	14,781
Nebraska	-	-	-	-	-	-	4
Nevada	192	933	4,094	362	2,602	310	-
New Hampshire	31	21,146	322,716	21,482	484,728	2,088	-
New Mexico	6,116	111,526	5,215,261	126,999	5,507,840	30,816	5,153
New York LUP	13	89	594	33	359	121	-
North Carolina	340	41,142	1,195,815	27,260	766,615	6,872	2,884
Ohio	40	5,718	178,937	4,543	126,996	920	738
Oklahoma	84	28,474	1,486,700	26,591	546,420	947	2,071
Oregon	4,639	3,366,466	517,107,045	3,068,815	330,907,840	40,884	50,432
Pennsylvania	101	48,267	1,712,002	31,228	1,204,247	1,358	201
South Carolina	153	137,332	7,224,238	113,012	4,481,787	2,825	4,431
South Dakota	98	84,058	1,891,961	92,940	955,102	13,435	45
Tennessee	97	29,111	437,621	32,583	636,244	4,577	1,077
Texas	711	26,759	876,708	92,109	4,820,876	13	3,502
Utah	1,437	61,281	1,553,125	54,016	833,525	6,376	788
Vermont	53	9,644	116,933	8,248	348,252	619	71
Virginia	255	33,972	415,627	24,355	282,054	6,636	1,733
Washington	3,611	1,412,315	136,084,688	1,268,623	91,811,935	21,855	32,417
West Virginia	90	7,218	160,460	3,479	68,730	9,125	88
Wisconsin	198	90,955	1,107,958	96,474	1,117,478	5,902	1,763
Wyoming	1,248	123,485	2,201,292	103,516	1,311,105	5,434	2,170
Caribbean	-	-	-	2	60	805	190
Grand Totals	44,466	9,919,695	$987,416,476	10,481,536	$732,546,790	386,292	260,459

1/ Exclude non-convertible sales
2/ Thousand board feet

TABLE A-6 -- FOREST SERVICE NURSERY PRODUCTION (thousand trees)

Region	Nursery		FY 1977 Sold to Nursery region	Sold to Other regions	Sold to Other agencies	Surplus destroyed	Total production
1	Coeur d'Alene		5,529	4,370	787	157	10,843
2	Bessey				2,598		2,598
	Mt. Sopris		525	315	15	-	855
		Subtotal	525	315	2,613	-	3,453
4	Lucky Peak		2,583	4,368	68	28	7,047
5	Placerville		7,315	-	337	748	8,400
	Humboldt		6,695	4,185	536	200	11,616
		Subtotal	14,010	4,185	873	948	20,016
6	Bend		3,367	67	434	31	3,899
	Wind River		20,752	-	2,900	580	24,232
		Subtotal	24,119	67	3,334	611	28,131
8	Ashe		21,369	-	-	5,786	27,155
9	Eveleth		2,373		-	88	2,461
	Toumey		3,397		22	-	3,419
		Subtotal	5,770		22	88	5,880
	GRAND TOTAL		73,905	13,305	7,697	7,618	102,525

TABLE A-7 -- CONTAINERIZED NURSERY STOCK PRODUCTION
(Thousand plantable trees)

FY 1977

Region	Facility	Number seeded	Plantable seedlings produced	Disposition		Produced for 1978
				National Forests	Sold	
1	Coeur d'Alene	755	680	668	12	
2	Mt. Sopris	450	435	435		
3	Albuquerque	748	678	638	40	
6	Beaver Creek	1,620	1,350	1,350		
8	(2 locations)	993	825	825		
9	(6 locations)	87	79	42		37
10	Petersburg	10	8	8		
	TOTAL	4,663	4,055	3,966	52	37

TABLE A-8 -- SEED EXTRACTORY PRODUCTION
(Pounds of clean seed)

FY 1977

Region	Location		Seed origin: Seed orchard and selected Trees	Seed origin: Seed production areas and seed stands	Seed origin: Other area	Total
1	Coeur d'Alene		38	1,171		1,209
2	Bessey		26			26
	Sopris			726		726
		Subtotal				752
3	Santa Fe				5,612	5,612
4	Lucky Peak				277	277
5	Klamath		20 1/			20*
	Placerville		60 1/			60*
	Placerville		21		8,855	8,876
		Subtotal	101		8,855	8,956
6	Wind River		3,485	54	7,273	10,812
8	Ashe		444	3	4,173	4,620
	Stuart		664	-	-	664
		Subtotal	1,108	3	4,173	5,284
9	Various locations		25	145	675	845
10	Petersburg		2	-	-	2
	GRAND TOTAL		4,785	2,099	26,865	33,749

1/ Not Working Capital Fund (Tree Improvement Seed)

TABLE A-9 -- OTHER PLANTING STOCK AND SEED ACQUISITION

FY 1977

Region	Planting stock (thousand trees)					Planting stock (thousand trees)				
	Service contract	Other regions	Other agencies	Commercial sources	Total	Service contract	Other regions	Other agencies	Commercial sources	Total
2	174 1/			20 1/	194					
3		4,648			4,648					
4		902			902					
5	102		33		135			495		495
6	1,245	7,400	6,426		15,069				270	270
8			7,027	110	7,137			300		300
9			1,895		1,895		1,000		404	1,404
TOTAL	1,519	12,950	15,381	130	29,980		1,000	795	674	2,469

1/ Not Working Capital Fund (Tree Improvement Seed)

APPENDIX A-5 -- WATERSHED MANAGEMENT

WATER MANAGEMENT

Water resource inventories were completed on 15,751,000 acres during fiscal year 1977. These inventories are used in land management planning and project planning activities on the National Forests.

SUPPORT SERVICES

Watershed conditions were monitored. Water samples were collected at 5,324 locations. Analyis was performed to determine the effects of National Forest management on the water resource. Predictions of the effects of alternative land treatment measures for projects such as timber harvest, reforestation, range improvement, recreation development and other land management activities were provided to land managers. The inputs were designed to insure the protection and enhancement of the water resource.

APPENDIX A-6 -- MINERALS AREA MANAGEMENT

Emphasis of the minerals program in fiscal year 1977 was aimed at protecting the surface resources and coordinating uses on National Forest Lands. The level of activity experienced during the year exceeded that which had been anticipated, but with supplemental funds added by Congress the program was able to proceed smoothly.

LEASES AND PERMITS FOR OIL AND GAS

Leases were issued for oil and gas development on approximately 3.2 million acres of National Forest Land. Exploration permits were issued, and 2,000 miles of seismic lines were run. At least eight new fields of oil and gas deposits were located. Eighty new drilling permits were evaluated and 42 production wells resulted from drilling efforts during the fiscal year.

ENVIRONMENTAL ANALYSIS EFFORTS

Resource data were gathered and evaluations were conducted on seven geothermal areas resulting in the completion of six environmental analysis reports. The environmental analysis on the Mt. Hood known Geothermal Resource Area in Oregon was completed, and a lease was issued.

Coordination efforts were completed and operating plans were approved leading to the drilling of 26 holes on the Cove Fort geothermal project in Utah.

The Forest Service completed inventory collection for input to the Northern Powder River Study, which will be utilized as input in the U.S. Department of Interior regional coal impact statement.

As a joint effort with the Nuclear Regulatory Commission and the U.S. Geological Survey, the environmental statement was completed for a major uranium mine and mill on the Thunder Basin National Grasslands of Wyoming.

APPENDIX A-7 -- PROTECTION

FIRE MANAGEMENT

The forest fire management program provides for protection on the 187 million acre National Forest System and assistance in the protection of 20 million acres of State and private lands. During 1977, the fire management fund was implemented. The fund is designed to totally budget all presuppression activities.

FUELS MANAGEMENT

Fuels management received increased emphasis. During this fiscal year, fuel reduction exceeded the RPA high goal when fuel reduction was accomplished on 266,200 acres with fire protection funds. Fuel reduction benefits were also obtained on more than 1,100,000 acres when activity created slash was treated and on 325,000 acres where naturally occurring fuels were treated for other purposes. Activities included are timber sale slash disposal, road construction, wildlife and range habitat improvements, and treatment of debris in timber stand improvement areas. In all, fuel reduction benefits were obtained more than 1.71 million acres.

FIRE SUPPRESSION

The 1977 fire season will be compared to the 1910, 1934, and 1967 fire seasons as one the worst in recent history and will be talked about for many years to come. Nineteen States suffered severe fire losses. The two States hit hardest were California and Alaska, with a combined total of more than 2.5 million acres of public and private lands burned.

The severe drought that occurred in several parts of the Nation had an effect on Forest Service programs and upon the land itself. The most dramatic and most dangerous of all the consequences of the drought was the effect it had upon forest and range fires and, more generally, upon the fire season itself. The season began earlier than usual. Fire starts were more prevalent; fires burned larger areas; and, because of the drought conditions, they caused more damage than during periods with normal conditions.

The extreme fire potential necessitated increased protection and prevention efforts, and increased funding was provided for this purpose. The number of man-caused fires increased due to the ease of ignition created by the drought. The 7,358 man-caused fires

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APPENDIX A-8 -- LANDS ADJUSTMENT

Major emphasis for acquisition and exchange was to increase the National Forest System effectiveness in improving resource quality and productivity. Landownership patterns were adjusted to ensure the most effective and economical management of National Forest System lands. Acquisition was consistent with authorized objectives, including watershed protection, public outdoor recreation, and timber production.

This resulted in:

Land Acquisition	Acres	Cases	Value
--Purchase (acres offered-approved)	76,856	460	$41,169,040
--Exchange	61,383	146	63,703,655
--Donation	1,435	21	506,428
Special Studies 1/	325,000	12	---

1/ Includes special studies for land transfers, interchanges and boundary modifications.

APPENDIX A-9 -- SOIL MANAGEMENT

SUPPORT SERVICES

A knowledge and understanding of the soils, their condition, capability, and suitability for use and management is essential to all land and resource management and planning activities on National Forest System lands.

Soil resource inventories are a means by which basic soil information is obtained and interpreted for specific areas of land. Inventories at various levels of intensity were completed on 13,569,000 acres of National Forest System land in FY 1977.

The soil science support activity is concerned with the direct application of technical soil knowledge to specific resource management situations. During FY 1977, soil scientists provided over 80-man-years of soil science support for individual projects such as timber sales, reforestation, range improvement activities, recreation developments, and other similar projects. These inputs were designed to insure the protection and enhancement of the soil resource.

SOIL AND WATER RESOURCE IMPROVEMENT

Treatment of 16,782 acres to improve the water quality and soil productivity during FY 1977. Activities included sheet erosion reduction, soil quality enhancement, channel stabilization, and sediment retention structures.

APPENDIX A-10 -- FACILITIES (ROADS) MANAGEMENT

Resource management activities and the many other National Forest purposes must be served by appropriate facilities and services. A modern system is needed to efficiently carry out management responsibilities and provide services to the public.

TABLE A-10 -- FY 1977 ROAD CONSTRUCTION ACCOMPLISHMENT

State or Commonwealth	Construction & Reconstruction from Appropriated Funds			Construction & Reconstruction by timber purchasers		
	Miles of road	No. of bridges	Thousand dollars	Miles of road	No. of bridges	Thousand dollars
AL	10	6	1,211	13	-	139
AK	11	18	12,894	152	338	31,823
AZ	55	-	4,254	268	-	1,209
AR	18	5	3,069	230	-	3,177
CA	163	10	34,475	2,043	16	17,154
CO	72	4	5,990	235	-	2,224
FL	15	-	665	21	-	202
GA	12	4	1,811	42	-	577
ID	165	10	19,942	896	8	12,684
IL	0	1	300	4	-	4
IN	3	-	-	-	-	-
KS	-	-	-	-	-	-
KY	16	-	1,508	5	-	75
LA	6	6	1,303	70	-	1,366
ME	0	-	34	2	1	21
MI	26	-	1,029	92	-	266
MN	21	-	1,348	50	-	287
MS	11	14	1,272	162	-	1,415
MO	15	1	349	44	-	143
MT	52	2	12,140	897	-	10,357
NE	1	-	2	-	-	-
NV	3	-	182	-	-	-
NH	2	2	452	13	1	246
NM	44	-	3,099	59	-	529
NY	-	-	-	-	-	-
NC	19	3	1,505	46	-	468
ND	-	-	-	-	-	-
OH	1	-	100	-	-	-
OK	4	1	288	19	-	410
OR	84	22	37,627	1,836	-	44,024
PA	0	-	363	38	-	451
PR	0	-	5	-	-	-
SC	33	7	1,496	148	2	2,220
SD	8	-	1,310	73	-	613
TN	11	1	939	30	-	178
TX	12	10	1,424	1	-	30
UT	55	3	3,330	49	-	672
VT	3	-	409	3	-	61
VA	32	2	1,431	6	-	69
WA	6	5	15,290	714	-	21,322
WV	5	-	829	14	-	246
WI	15	2	808	70	-	307
WY	21	4	2,175	227	-	1,315
WO	0	-	4,111	-	-	-
TOTAL	1,020	143	180,769	8,572	336	158,626

APPENDIX A-11 -- RECEIPTS AND EXPENDITURES
(Fiscal Year 1977)

Receipts from the sale or use of National Forest System Resources amounted to $691,568,536 in fiscal year 1977. These direct cash receipts came from the following major sources:

Timber	$ 652,050,186
Grazing	11,442,605
Land uses	1,604,199
Recreation	6,168,831
Power	366,231
Mineral leases and permits	14,426,100
Admission and user fees	5,510,384
Total	$691,568,536

This total includes $26,159,508 received from National Forest revested Oregon and California railroad grant lands and $4,957,808 received from National Grasslands and Land Utilization areas administered under Title III of the Farm Tenant Act.

Other amounts received from the National Forest System, but not listed above, included: $19,492,261 contributed by cooperators and timber purchasers for cooperative work on National Forest programs; $106,529,083 set aside for timber sale area improvements, $129,898 for timber salvage sales, $39,077,566 for brush disposal; $2,039,402 from miscellaneous receipts; $24,605 for restoration of forest lands and improvements; and $6,110 from the sale of Federal recreation area entrance permits. Thus, the total of direct receipts and deposits for fiscal year 1977 was $858,867,461.

Several other values can also be related to National Forest System operations for the fiscal year. Timber purchasers built roads valued at $123,282,694, incident to timber harvest. Other Federal agencies collected $79,540,953, for mineral leases, permits, and power licenses on National Forest land of public domain origin.

With these additions, cash receipts and income for the fiscal year totaled $1,061,691,108.

Operating expenses for National Forest System programs, including those for National Grasslands and Land Utilization Projects, amounted to $894,026,489. With the addition of an estimated $120,041,173 for depreciation expense of roads, trails, equipment, and other improvements, the fiscal year total is $1,014,067,662.

The result of these calculations for the National Forest System is that receipts and all other earnings exceeded operating expenditures by $47,623,446.

Fiscal year receipts increased $314,295,644 over fiscal year ending June 30, 1976. Expenditures for fighting forest fires exceeded the 3-year average by $129,572,496.

Expenditures for Forest Service research and cooperative activities were: $89,055,453 for forest research programs, $51,856,855 for cooperative State and Private Forestry programs, and $276,334,639 for other government agency and non-government cooperative programs.

Receipts and incomes for these programs totaled $24,842,826. Included in these amounts were $219,462 in royalties from the Smokey Bear and Woodsy Owl licensee programs, and $80,936 from the sale of surplus properties which are available for appropriation by Congress to the Land and Water Conservation Fund.

Under authority of 16 U.S.C. 500, as amended, the Forest Service pays to the States 25 percent of National Forest receipts, to be used for the benefit of public schools and roads in counties containing National Forest lands. This payment, based on fiscal year 1977 receipts, was $224,098,352. Arizona and New Mexico also received $219,320 under the authority of 36 Stat. 562, 573, and Minnesota received $259,038 under authority of 16 U.S.C. 577g. By law, the Forest Service retains 10 percent of receipts from National Forest resources for development of National Forest roads and trails, except on revested Oregon and California railroad grant lands. The amount retained in this fund was $66,011,935.

Counties containing National Grasslands and Land Utilization areas received $1,316,726 for schools and roads (based on 1976 calendar year receipts of $5,266,903). As required by law, this payment is made on the basis of calendar year receipts.

TABLE A-11 -- FISCAL YEAR 1977

STATEMENT OF NET RECEIPTS FROM
NATIONAL FORESTS, NATIONAL GRASSLANDS AND LAND UTILIZATION PROJECTS
OCTOBER 1, 1976 TO SEPTEMBER 30, 1977

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 8	Region 9	Region 10	Total Net Receipts	Total Same Period Last Year	Increase or Decrease
National Forest Receipts												
Timber Purchaser Road Credits	20,618,759.33	1,745,444.29	1,954,683.71	68,378.00	31,715,976.51	71,866,396.62	6,774,138.23	767,951.19	8,658,492.62	144,170,220.50		144,170,220.50
K-V Collections	9,678,225.14	2,771,527.01	5,108,779.78	3,670,943.46	11,147,154.78	40,005,003.80	14,623,302.89	4,184,541.63	918,198.56	92,107,677.05		92,107,677.05
Timber and Forest Products Sales, Settlement and Trespass	43,261,113.46	3,409,523.05	16,781,850.51	18,346,277.41	141,377,381.72	361,863,373.51	36,036,290.06	4,312,691.85	538,579.29	625,927,080.86	477,647,194.20	148,279,886.66
Grazing and Grazing Trespass		320,868.69					50,816.52	14,458.36	35.00	386,178.57	377,764.86	8,413.71
Land Uses	72,156.64	131,782.48	187,543.35	87,476.40	469,792.69	125,031.88	306,611.53	120,711.85	19,133.77	1,520,240.59	1,387,556.64	132,683.95
Recreation	281,393.34	1,046,965.38	398,887.04	616,541.24	2,326,418.50	889,089.92	155,523.25	381,049.93	65,672.21	6,161,540.81	6,512,210.32	-350,669.51
Power	12,580.10	25,532.87	37,947.13	18,547.52	120,281.35	14,718.69	106,666.50	25,979.09	1,605.73	363,858.98	331,769.17	32,089.81
Mineral Leases and Permits	16,841.04	20,006.78	25,101.53	151,098.43	67,436.40	44,440.57	3,170,735.93	7,775,581.31	5,779.17	11,277,021.16	8,821,009.99	2,456,011.17
Admission and User Fees	114,921.73	491,982.87	330,101.24	564,617.26	1,395,997.50	634,357.97	1,036,410.61	923,648.11	13,654.66	5,505,691.95	5,071,130.36	434,561.59
Grazing in 11 Western States	937,200.33	1,543,919.11	3,132,631.88	2,324,210.56	563,334.99	808,310.37				9.309.607.24	9,113,814.69	195,792.55
Total 25% Payment Base	74,993,191.11	11,507.552.53	27,957,526.17	25,848,090.28	189,183,774.44	476,250,723.33	62,260,495.52	18,506,613.32	10,221,151.01	896,729,117.71	509,262,450.23	387,466,667.48
O&C Lands (National Forests)					129,898.38	26,029,610.32				26,159,508.70	15,885,231.58	10,274,277.12
Total National Forests Receipts	74,993,191.11	11,507,552.53	27,957,526.17	25,848,090.28	189,313,672.82	502,280,333.65	62,260,495.52	18,506,613.32	10,221,151.01	922,888,626.41		
Total Same Period Last Year	25,721,885.22	5,849,516.53	14,513,333.26	18,063,755.76	120,699,678.00	286,951,022.79	41,275,977.31	10,691,196.44	1,381,316.50		525,147,681.81	
Increase or Decrease a)	49,271,305.89	5,658,036.00	13,444,192.91	7,784,334.52	68,613,994.82	215,329,310.86	20,984,518.21	7,815,416.88	8,839,834.51			397,740,944.60
Nat'l. Grasslands & Land Utilization												
Timber and Forest Products Sales, Settlement and Trespass	100.00		875.00			160.00		1,537.71		2,672.71	2,960.25	-287.54
Grazing and Grazing Trespass	558,231.11	918,142.53	202,907.72	16,479.24	2,588.96		36,589.51	6,586.27		1,741,525.34	1,933,446.80	-191,921.46
Land Uses	19,272.76	21,504.77	2,910.38	33.20	1,440.00	1,833.50	2,463.09	718.60		50,176.30	51,876.42	-1,700.12
Recreation		25.00	6,856.07			221.00	145.55	42.00		7,289.62	434.10	6,855.52
Power	270.00	782.00	65.00	217.12		988.00	20.30	30.00		2,372.42	2,063.30	309.12
Mineral Leases and Permits	1,745,140.86	704,225.74	253,046.25		43.33		261,035.02	185,587.94		3,149,079.14	3,270,126.42	-121,047.28
Admission and User Fees	1,065.45					3,137.01		490.00		4,692.46	4,844.48	-152.02
Total Nat'l. Grasslands & Land Utilization	2,324,080.18	1,644,680.04	466,660.42	16,729.56	4,072.29	6,339.51	300,253.47	194,992.52		4,957,807.99		
Total Same Period Last Year	2,457,596.07	1,795,037.05	608,490.06	15,768.33	2,653.70	12,558.21	181,851.33	191,817.02			5,265,751.77	
Increase or Decrease	-133,515.89	-150,357.01	-141,829.64	961.23	1,418.59	-6,218.70	118,422.14	3,175.50				-307,943.78
Grand Total	77,317,271.29	13,152,232.57	28,424,186.59	25,864,819.84	189,317,745.11	502,286,673.16	62,560,748.99	18,701,605.84	10,221,151.01	927,846,434.40		
Grand Total Same Period Last Year	28,179,481.29	7,644,553.58	15,121,823.32	18,079,524.09	120,702,331.70	286,963,581.00	41,457,808.64	10,883,013.46	1,381,316.50		530,413,433.58	
Increase or Decrease b)	49,137,790.00	5,507,678.99	13,302,363.27	7,785,295.75	68,615,413.41	215,323,092.16	21,102,940.35	7,818,592.38	8,839,834.51			397,433,000.82
a) Increase or Decrease of Nat'l Forest Receipts Net of Timber Purchaser Road Credits and K-V Collections	18,974,321.42	1,141,064.70	6,380,729.42	4,045,013.06	25,750,863.53	103,457,910.44	-412,922.91	2,862,924.06	-736,856.67			161,463,047.05
b) Increase or Decrease of Grand Total Net of Timber Purchaser Road Credits and K-V Collections	18,840,805.53	990,707.69	6,238,899.78	4,045,974.29	25,752,282.12	103,451,691.74	-294,500.77	2,866,099.56	-736,856.67			161,155,103.27

APPENDIX

PART B.

STATE AND PRIVATE FORESTRY

PROGRAM ACCOMPLISHMENTS -- AN OVERVIEW

To encourage effective and efficient expenditure of Federal funding, assistance on administrative, managerial, and personnel systems is offered State forestry agency cooperators. Some major consultive efforts in 1977 included installation of management-by-objectives systems, team development, pay and classification system studies, long-range planning, and information and education program planning. Further, many State employees were trained in administrative or managerial topics.

To better permit State Foresters to have direct input to the State and Private Forestry portion of Resource Planning Act programs for the future, the National Association of State Foresters encourages development of State forestry plans. A sample plan format has been adopted, and many State Forestry agencies are now involved in long-range forestry planning. Strengthened State planning will provide a firmer base for cooperative forestry programs.

The President's Environmental Message of May 23, 1977, directed the Secretary of Agriculture to undertake a comprehensive study of cooperative forestry programs. A task group composed of representatives of ASCS, CSRS, ES, and SCS, under leadership of the Forest Service, prepared a report entitled, "The Federal Role in the Conservation and Management of Private Nonindustrial Forest Lands." It was forwarded to the President in August, 1977.

The report includes a brief review of the national importance of private nonindustrial forests; a discussion of the principal factors which may inhibit resource management on these lands; and approaches available to the Federal Government to stimulate the conservation and management of private nonindustrial forest lands. The report does not comment on Federal agency roles, nor does it make any specific program recommendations.

In October, the USDA Forestry Planning Committee sponsored a meeting of selected field personnel from Federal and State agencies and universities. This meeting addressed agency roles. As a result, a USDA interagency agreement on forestry is now in the final review process. The Committee has also developed a number of proposed initiatives for followup action on the Report to the President. This will be forwarded to the Department for review early in 1978.

APPENDIX B-1 -- FOREST INSECT AND DISEASE MANAGEMENT

In response to the directive of the conferees on the 1976 Interior Appropriation Bill regarding the Forest Insect and Disease Control Program, directing the Forest Service to "study alternative cost-sharing arrangements where private and State lands are involved, with the intent of reducing the Federal share below 50 percent on State and private lands," the Forest Service developed a set of criteria for selecting control projects without reducing the effectiveness of the program. These criteria must be satisfied before a project can be approved:

There must be a Federal role to be served.
The project must be biologically sound.
The project must be environmentally acceptable.
The project must be economically efficient.

The Forest Service implemented this policy in FY 1977 whereby Federal funds available for cooperative forest insect and disease suppression projects were based on landownership size once the project selection criteria had been satisfied. The Federal contribution of cost-sharing for cooperative projects is: 50 percent on private landownerships smaller than 500 acres, 33 1/3 percent on private landownerships larger than 500 acres, and 25 percent on State lands.

As a result of this study and policy implemented by the Forest Service in FY 1977, $780,000 of Federal funds were reduced from cooperative suppression projects. The total cooperative effort in FY 1977 was $7.5 million. Under the previous cost-sharing policy, the Federal share would have been $3.75 million, but under the new cost-sharing policy, $2.97 million Federal funds were expended. With this reduction in Federal funds, no cooperative suppression project was impaired or curtailed. This reduction in Federal funds did not reduce the efficiency and effectiveness of any cooperative suppression effort.

Cooperation with States. In fiscal year 1977, 43 States participated in the Cooperative Pest Action Program. Fiscal year 1977 suppression project and pest action program cost-sharing with the States led to approximately 4.2 million Federal dollars moving directly and 3.6 million Federal dollars moving indirectly into the Cooperative State Forest Insect and Disease Management Programs.

Bark beetles. Suppression of various bark beetle outbreaks in the United States involved treatment of many spot infestations in the South, Midwest, and West. The Southern pine beetle populations are collapsing in many areas but are still being vigorously controlled. Although direct treatment was necessary in some places, greater advantage was taken to utilize removal of infested trees from the forests before the insects were able to emerge and kill additional trees. In 1977, 34.3 million cubic feet of merchantable timber volume was protected and 57.8 million cubic feet of merchantable timber volume was salvaged from forests in the South.

Bark beetle suppresison projects directed primarily at the mountain pine beetle in the West resulted in about 9.4 million cubic feet of merchantable timber volume being protected and 5.1 million cubic feet of merchantable timber volume being salvaged from forests. The mountain pine beetle outbreak is still raging. More integrated pest management strategies are being tested and stressed for controlling this insect.

Spruce budworm and western spruce budworm. Sevin 4-oil, Orthene forest spray, and Dylox 4 were used in a cooperative suppression effort with the State of Maine to treat some 930,000 acres for spruce budworm where severe damage was imminent in 1977. Foliage protection and prevention of tree mortality were accomplished.

During 1977 the western spruce budworm infested approximately 1.1 million acres in the States of Oregon and Washington. Sevin 4-oil was used in the summer of 1977 to suppress budworm populations on National Forest lands, on the Warm Springs Indian Reservation in cooperation with the USDI Bureau of Indian Affairs, and on State and private lands in the State of Washington. About 417,000 acres of high-use, high-value areas were sprayed, of which approximately 688 acres were on the Warm Springs Indian Reservation in Oregon and 60,500 acres were on State and private lands in the State of Washington. About 155.8 million board feet of merchantable timber volume were protected in addition to other resource values.

Gypsy moth. A total of 1.6 million (1.3 million acres in Pennsylvania) acres of woodland in the Northeastern United States were defoliated by the gypsy moth in 1977--a dramatic increase. Cooperative suppression efforts with the States of New Jersey and Pennsylvania were necessary in 1977. Some 96,000 acres were treated in 1977 with Sevin 4-Oil and Dylox 1.5. Small acreages were sprayed with Orthene forest spray and Dimilin. Foliage protection and population reduction were achieved in the sprayed areas.

APPENDIX B-2 -- FORESTRY INCENTIVES PROGRAM

The Forestry Incentives Program (FIP), jointly administered by the Forest Service and the Agricultural Stabilization and Conservation Service, is carried out by State forestry organizations. The program has provided cost-share assistance to private forest landowners to carry out needed tree-planting and timber stand improvement measures for the fourth year. During the 12-month period from October 1, 1976, through September 30, 1977, sites on 153,158 acres were prepared and planted for timber production purposes. Timber stand improvement was accomplished on 155,158 acres. The Federal Government's share of treating these 308,413 acres was $11.1 million, while landowners contributed $3.7 million.

APPENDIX B-3 -- COOPERATIVE FIRE PROGRAM

Protection of forested and non-forested watersheds from the effects of wildfire is a matter of public concern. Products and other resources from these lands--water, timber, and fiber products, recreation, and wildlife--are vital to, and used by, all citizens of the United States. The Clarke-McNary Act of 1924 was enacted, to encourage States to establish effective fire protection organizations. Most States have done this.

The Federal role in this program is twofold. One role is to provide technical assistance to States to strengthen their capabilities to provide fire protection for the non-Federal forest and non-forested watershed lands. Another role is to provide financial assistance that serves as a catalyst in helping States protect the approximately 1.1 billion acres of non-Federal forest and non-forested watershed lands.

The effectiveness of having highly trained, organized, and physically capable State firefighters to assist in fighting forest fires on National Forest lands was demonstrated again during the summer of 1977. About 1,300 State forest firefighters from 34 States aided Federal firefighters in California and other Western States.

Several States experienced a hot and dry fire season. These conditions resulted in a higher fire occurrence than had been experienced in the past several years. Because of the dry conditions some fires spread rapidly, but with fast initial attack most fires were held to small acreage. The drought conditions, however, did force land managers to take additional precautions which resulted in additional cost.

APPENDIX B-4 -- SMOKEY BEAR

Spanning over three decades, the image of Smokey Bear has become a well recognized international symbol for the Cooperative Fire Prevention Campaign which began in 1942. The concept of a symbolic Smokey Bear was created in 1945.

Through the Advertising Council, Inc. efforts with the mass media outlets of radio and television, the Smokey Bear program received public service time estimated to be worth more than $31 million.

The success of two separate mailings of the 1977 public service radio announcements again strengthens the traditional message of Smokey Bear--REMEMBER--ONLY YOU CAN PREVENT FOREST FIRES.

APPENDIX B-5 -- RURAL FIRE

Over 125 million acres of rural lands do not have adequate protection from fire. An estimated 46,168 rural communities in the United States have inadequate protection to meet State standards. The Rural Community Fire Protection Program is an attempt to provide a basic building block for the economic development and improvement of the quality of life in rural America.

The program provided assistance to over 3,000 communities in organizing, equipping, and training rural fire departments. Over 300 excess military vehicles were converted to fire trucks by rural volunteers. Many rural areas have no organized fire protection districts. This year over 100 new departments were organized and over 10,000 rural fire personnel received training in fire protection activities.

TABLE B-1 -- COOPERATIVE FOREST MANAGEMENT AND PROCESSING PROGRAM
- PROGRESS -

Fiscal Year 1977
(U.S. Forest Service and State Foresters Cooperating)

State Commonwealth, or Territory	PROGRESS					
	Assists to woodland owners	Area of woodland involved	Area eceiving planting and TSI assistance	Timber sale assistance-- vol. marked	Assists to loggers and processors	Improved utilization
	-Number-	-Acres-	-Acres-	-M bd. ft.[3]	-Numbers-	-M cu. ft.-
Alabama	2,070	87,057	8,263	45	182	3,039
Alaska [2]	427	77	39	300	61	1,152
Arizona	852	6,706	1,107	297	62	353
Arkansas	1,374	81,517	5,384	2,137	106	2,347
California	4,668	61,914	19,253	11,188	420	18,847
Colorado	8,508	44,823	3,179	11,455	352	8,180
Connecticut	1,893	17,826	2,600	907	28	43
Delaware	368	13,933	485	5,877	15	31
Florida	1,183	218,872	4,734	1,622	567	10,937
Georgia	12,757	410,857	8,182	15,848	977	11,040
Guam	14	48	34	0	0	0
Hawaii	801	145,204	7,418	39,254	143	212
Idaho	281	6,694	1,187	14,791	192	5,139
Illinois	2,471	24,590	4,153	4,802	51	0
Indiana	2,226	78,929	176	9,265	230	805
Iowa	2,041	18,324	1,473	1,315	124	1,092
Kansas	1,292	10,689	920	1,428	91	219
Kentucky	1,782	81,770	2,007	13,906	7,323	820
Louisiana	1,420	122,463	951	2,889	7	2,878
Maine	2,161	46,210	447	10,500	834	2,563
Maryland	1,849	39,340	1,530	7,107	474	249
Massachusetts	2,343	82,415	260	12,873	129	2,561
Michigan	1,339	45,348	126	7,913	52	819
Minnesota	3,160	76,782	9,738	9,504	366	2,825
Mississippi	4,336	193,227	32,069	9,818	240	10,073
Missouri	2,880	170,450	32,080	28,395	684	3,535
Montana	1,439	368,628	6,965	86,756	444	6,926
Nebraska	2,022	11,608	3,754	405	53	737
Nevada	260	5,941	281	0	1	83
New Hampshire	1,937	39,799	845	5,155	434	3,743
New Jersey	1,290	41,397	720	2,091	200	1,937
New Mexico	585	8,452	788	60	21	1,003
New York	4,738	160,397	3,710	36,427	191	2,149
North Carolina	10,259	274,480	5,396	51,753	58	541
North Dakota	462	15,449	276	62	8	1,422
Ohio	4,576	139,626	1,920	43,312	480	529
Oklahoma	270	22,027	1,346	1,881	8	47
Oregon	1,025	121,241	65,236	17,689	11,558	45,693
Pennsylvania	1,293	29,237	3,315	9,732	142	38
Puerto Rico	790	1,621	764	0	0	0
Rhode Island	126	2,940	123	122	0	0
South Carolina	4,734	213,185	6,718	22,245	98	915
South Dakota	1,129	15,231	679	16.618	31	860
Tennessee	3,216	90,971	6,081	24,797	18	254
Texas	1,152	88,728	11,950	4,468	16	5,303
Utah	406	10,126	375	50	29	759
Vermont	2,406	89,983	2,313	16,487	476	1,175
Virginia	11,873	415,071	60,371	277,762	341	1,523
Virgin Island	52	83	44	0	0	0
Washington	2,064	70,116	2,625	4,100	499	12,621
West Virginia	4,076	97,270	3,502	26,903	28	939
Wisconsin	6,783	178,780	24,031	46,124	207	390
Wyoming	160	15,215	39	2,736	50	1,576
U.S. Total	133,619	4,613,667	361,962	921,171	29,101	180,922

1/Includes both areas receiving technical assistance only and technical assistance as a part of cost-sharing through FIP and ACP.

2/Includes direct assistance provided by Forest Service personnel.

3/Thousand board feet.

TABLE B-2 -- Nursery Stock Available for Forest and Windbarrier Planting and Acres Planted or Seeded on Federal, State, and Private Lands

Fiscal Year 1977

State, Commonwealth, or Territory	Planting stock produced, fiscal year 1977					Acres planted or seeded FY 1977
	Federal nurseries	state nurseries	Other public nurseries	Forest industry nurseries	Total stock available	
	Thousands					(Acres)
Alabama	-	76,493	-	53,202	129,695	147,518
Alaska	8	-	-	-	8	69
Arizona	-	-	-	-	-	6,229
Arkansas	-	14,480	-	28,000	42,480	107,679
California	20,016	3,420	227	39,833	63,496	83,376
Colorado	1,290	1,398	-	-	2,688	7,667
Connecticut	-	2,282	-	-	2,282	2,306
Delaware	-	400	-	-	400	676
Florida	202	35,667	-	59,682	95,551	160,237
Georgia	-	53,345	-	41,631	94,976	144,755
Guam	-	37	-	-	37	78
Hawaii	-	293	-	-	293	411
Idaho	18,570	416	-	-	18,986	18,770
Illinois	-	5,766	-	-	5,766	8,195
Indiana	-	4,959	-	-	4,959	4,549
Iowa	-	1,589	-	-	1,589	2,836
Kansas	-	327	-	-	327	4,625
Kentucky	-	7,356	3,000	-	10,356	19,636
Louisiana	623	60,235	-	7,379	68,237	92,999
Maine	-	-	-	-	-	570 *
Maryland	-	2,846	-	-	2,846	4,650
Massachusetts	-	-	-	-	-	164 *
Michigan	3,498	4,251	2,200	-	9,949	20,066
Minnesota	2,461	9,800	-	1,115	13,376	28,156
Mississippi	27,155	69,614	-	-	96,769	137,349
Missouri	-	7,151	150	-	7,301	13,512
Montana	-	1,323	360	168	1,851	20,303
Nebraska	2,598	199	-	-	2,797	5,201
Nevada	-	61	-	-	61	166
New Hampshire	-	846	-	-	846	446
New Jersey	-	406	-	-	406	645
New Mexico	678	-	-	-	678	5,453
New York	-	6,158	-	-	6,158	5,854
North Carolina	-	47,039	-	36,351	83,390	135,984
North Dakota	-	1,391	4,000	-	5,391	6,296
Ohio	-	8,416	-	-	8,416	10,060
Oklahoma	-	4,270	-	-	4,270	41,582
Oregon	5,249	29,408*	-	51,423*	86,080*	183,289 *
Pennsylvania	-	5,485	3,412	-	8,897	6,413
Puerto Rico	-	982	-	-	982	1,129
Rhode Island	-	-	-	-	-	267
South Carolina	-	39,795	-	11,751	51,546	80,515
South Dakota	-	742	-	-	742	5,521
Tennessee	-	20,900	-	-	20,900	33,894
Texas	-	33,542	-	36,534	70,076	127,938
Utah	-	195	-	-	195	1,099
Vermont	-	247	-	-	247	294
Virgin Islands	-	8	-	-	8	13
Virginia	-	50,299	-	12,623	62,922	93,532
Washington	24,232	22,848*	-	48,792*	95,872*	158,625 *
West Virginia	-	3,972	-	-	3,972	12,040
Wisconsin	-	13,365	-	2,075	15,440	19,513
Wyoming	-	-	-	-	-	3,248
Totals	106,580	654,022	13,349	430,559	1,204,510	1,976,398

* Estimated Figures

TABLE B-3 -- COOPERATIVE FOREST MANAGEMENT AND PROCESSING PROGRAM
- PROGRESS AND EXPENDITURES -

Summary of Selected Activities -- 1940-1977
(U.S. Forest Service and State Foresters Cooperating)

	PROGRESS			
Summary	Woodland owners assisted	Area of woodland involved	Timber sale assistance volume marked	Loggers and processors assisted
Fiscal Year	-Number-	-Acres-	-M bd. ft.-	-Number-
1940	--	--	--	--
1941	165	49,416	2,667	--
1942	224	92,442	10,076	--
1943	3,242	359,388	75,600	--
1944	8,842	742,697	323,557	--
1945	8,093	831,347	411,330	--
1946	12,083	1,321,746	452,367	--
1947	13,531	1,576,888	502,312	--
1948	14,220	1,399,971	503,641	--
1949	17,140	1,769,240	437,903	--
1950	22,828	2,542,564	518,566	--
1951	25,352	2,558,091	721,938	6,451
1952	27,933	2,501,317	609,562	9,429
1953	32,474	2,827,709	527,419	9,579
1954	32,224	2,557,993	538,391	8,429
1955	34,828	2,914,026	549,373	8,182
1956	38,121	3,124,744	625,592	9,254
1957	44,494	3,086,143	538,958	7,933
1958	58,752	3,435,719	444,797	8,926
1959	76,546	4,146,146	659,850	10,846
1960	82,188	4,115,612	569,178	8,099
1961	89,254	4,612,957	459,325	8,325
1962	91,418	4,797,106	547,787	8,126
1963	101,823	5,762,008	588,046	9,146
1964	97,063	6,140,678	668,274	8,691
1965	99,074	6,164,998	716,950	9,248
1966	105,014	6,552,831	906,009	9,825
1967	107,654	6,232,122	785,907	12,545
1968	106,328	7,774,941	704,241	11,097
1969	109,835	7,884,127	855,336	13,347
1970	115,197	6,945,456	1,225,520	13,620
1971	127,828	7,936,595	860,950	14,627
1972	274,001	11,158,328	955,627	5,290
1973	106,422	6,471,894	1,578,664	4,885
1974	117,990	7,105,606	907,311	5,353
1975	140,940	10,368,738	677,532	5,405
1976	105,184	4,085,126	596,599	15,318
1976-77 (T.Q.)	25,253	1,009,677	220,649	5,849
1977	133,619	4,613,667	921,171	29,101
	2,607,177	157,570,074	23,198,976	276,896

TABLE B-4 -- PROGRESS REPORT
COOPERATIVE FOREST MANAGEMENT AND PROCESSING PROGRAM

Fiscal Year 1977
(U.S. Forest Service and State Foresters Cooperating)

Assistance Activity	Unit of Measure	U.S. Forest Service Region or Area									
		Region 1	Region 2	Region 3	Region 4	Region 5 [1,2]	Region 6	Region 10 [2]	Northeastern Area	Southeastern Area [3]	Total
Assists Given Forest Landowners, Loggers, Processors:											
New --	Number	1,965	10,406	805	621	5,643	6,657	208	31,202	51,887	109,394
Repeat --	Number	1,135	4,136	681	130	1,661	8,326	282	30,093	47,779	94,223
Forest Management Plans Prepared:											
New --	Number	274	984	38	80	201	996	252	14,667	18,287	35,779
	Acres	53,333	35,296	7,909	11,672	37,461	63,548	25	729,275	1,323,388	2,261,907
Revised --	Number	118	69	9	7	33	624	0	2,578	5,728	9,166
	Acres	4,148	2,573	1,823	2,571	20,205	21,209	0	235,270	334,312	622,111
Site Preparation	Acres	25	605	0	35	3,612	18,300	0	8,797	99,796	131,170
Tree Planting:											
For Timber Production --	Acres	941	1,017	645	76	3,818	6,476	31	34,538	68,238	115,780
For Erosion Control --	Acres	0	397	52	258	1,453	2	0	812	1,064	4,038
For Surface Mine Reclamation --	Acres	2,000	8	26	0	147	0	0	1,081	6,863	10,125
Direct Seeding	Acres	15	471	3	0	5,590	0	3	22	1,890	7,994
Timber Stand Improvement	Acres	5,328	4,450	649	141	11,836	61,383	0	26,807	40,911	151,505
Outdoor Recreation Development	Acres	873	6,092	174	272	22,421	0	0	36,693	47,809	114,334
Wildlife Habitat Development	Acres	189	5,891	553	305	36,194	0	0	35,756	74,665	153,553
Forested Range Improvement	Acres	900	3,729	1,707	311	51,280	34	0	3,515	50,723	112,199
Forest Finance and Taxation Assistance	Number Assists	25	22	13	2	49	8	8	2,165	498	2,790
Insect and Disease Control Advice	Number Assists	330	8,442	143	284	3,453	262	40	2,952	17,600	33,506
Marketing Assistance to Landowners	M Cu. Ft.	203	7,039	328	429	2,750	956	0	29,606	39,604	80,916
Timber Sale Assistance:											
Preparation --	Acres	322,834	18,457	616	85	6,928	16,445	13	155,437	129,582	650,397
	M Cu. Ft.	17,648	7,330	153	9	9,632	4,359	60	60,509	118,286	217,986
Harvested --	Acres	41	16,352	481	160	2,360	3,960	0	95,286	87,394	206,034
	M Cu. Ft.	1	8,161	59	240	1,368	9,229	0	37,102	97,915	154,075
Harvesting Assistance to Loggers	M Cu. Ft.	7,796	5,694	920	259	9,327	49,293	568	14,110	16,965	104,932
Processing Assistance to Operators	M Cu. Ft.	5,691	5,876	386	583	9,732	9,021	584	11,314	32,751	75,938
Wood Drying Assistance	M Cu. Ft.	1	144	0	67	848	0	0	251	181	1,492
Processor Marketing Assistance	Number Assists	158	128	13	0	37	36	9	1,588	7,769	9,738
Urban and Community Forestry Activities	Number Assists	274	1,040	110	55	1,258	0	2	6,832	51,993	61,564
Referrals to Consulting Foresters	Number	62	47	21	4	400	138	18	2,995	2,700	6,385

1/ Includes Guam.
2/ Includes direct assistance provided by Forest Service personnel.
3/ Includes Puerto Rico and Virgin Islands.

APPENDIX

PART C.

HUMAN RESOURCE PROGRAMS

TABLE C-1 -- Job Corps Program - Fiscal Year 1977 *

	Appraised value of work accomplished	Number of participants	Person-years of work
Northeastern Area	-	-	-
Southeastern Area	-	-	-
Regions:			
1. Northern	1,831,400	896	456
2. Rocky Mountain	1,594,365	784	399
3. Southwestern	-	-	-
4. Intermountain	-	-	-
5. California	-	-	-
6. Pacific Northwest	2,273,733	1,694	863
8. Southern	5,121,769	2,616	1,334
9. Eastern	1,295,756	870	443
10. Alaska	-	-	-
Research Units	-	-	-
Total	12,117,023	6,860	3,495

*Figures shown represent participation during the period of July 1, 1976 through September 30, 1977.

TABLE C-2 -- Human Resource Programs

Manpower Training Programs -- Fiscal Year 1977*

	Appraised value of work accomplished	Number of participants	Person-years of work
Northeastern Area	94,200	55	15
Southeastern Area	23,184	11	3
Regions:			
1. Northern	824,024	579	113
2. Rocky Mountain	1,035,076	746	152
3. Southwestern	478,619	462	91
4. Intermountain	1,610,339	735	196
5. California	3,174,694	3,569	445
6. Pacific Northwest	2,894,950	1,967	328
8. Southern	3,127,965	1,406	507
9. Eastern	1,717,761	818	263
10. Alaska	2,600	2	2
Research Units:			
Intermountain Forest and Range Experiment Station	68,090	80	13
North Central Forest Experiment Station	33,533	40	4
Northeastern Forest Experiment Station	17,050	18	4
Pacific Northwest Forest and Range Experiment Station	21,900	34	4
Pacific Southwest Forest and Range Experiment Station	66,092	39	9
Rocky Mountain Forest and Range Experiment Station	41,956	72	7
Southeastern Forest Experiment Station	41,723	19	7
Southern Forest Experiment Station	10,162	21	3
Institute of Tropical Forestry	-	-	-
Forest Products Laboratory	7,028	9	1
Total	15,290,946	10,682	2,167

*Includes College Work/Study, Vocational Work/Study, Work Incentives Program, Senior Community Service Employment Program, and hosted or contract/cooperative agreements under the Comprehensive Employment and Training Act of 1973, as amended; for the period of July 1, 1976 through September 30, 1977.

Does not include Job Corps, Youth Conservation Corps, Young Adult Conservation Corps, and the Title X, Job Opportunities Programs.

Senior Community Service Employment Program (SCSEP) includes both the interagency Forest Service program shown on page 113 and SCSEP hosted programs administered by other organizations.

TABLE C-3 -- Youth Conservation Corps - Calendar Year 1977

	Number of participants	Person-weeks of participation	Minority participation (percent)
Northeastern Area	--	--	--
Southeastern Area	--	--	--
Regions:			
1. Northern	560	3,853	5
2. Rocky Mountain	643	4,699	18
3. Southwestern	878	6,358	41
4. Intermountain	827	5,699	6
5. California	1,473	10,053	17
6. Pacific Northwest	789	6,053	5
8. Southern	2,885	21,611	22
9 Eastern	3,664	21,597	5
10. Alaska	174	1,151	36
Research Units:			
Intermountain Forest and Range Experiment Station	20	160	5
North Central Forest Experiment Station	--	--	--
Northeastern Forest Experiment Station	20	200	0
Pacific Northwest Forest and Range Experiment Station	--	--	--
Pacific Southwest Forest and Range Experiment Station	14	112	29
Rocky Mountain Forest and Range Experiment Station	—	--	--
Southeastern Forest Experiment Station	--	--	--
Southern Forest Experiment Station	26	190	38
Institute of Tropical Forestry	--	--	--
Forest Products Laboratory	--	--	--
Total----------	11,973	81,736	15

*Forest Service only. Does not include Department of the Interior or State grants. Value of work accomplished not yet available.

TABLE C-4 -- Volunteers - Fiscal Year 1977

	Appraised value of work accomplished	Number of participants	Person-years of work
Washington Office	38,304	8	3
Northeastern Area	-	-	-
Southeastern Area	6,400	1	1
Regions:			
1. Northern	210,390	360	26
2. Rocky Mountain	480,071	2,676	61
3. Southwestern	289,560	606	39
4. Intermountain	189,185	2,156	32
5. California	553,335	2,547	68
6. Pacific Northwest	502,292	1,576	73
8. Southern	156,212	547	23
9. Eastern	247,395	318	33
10. Alaska	24,960	28	6
Research Units:			
Intermountain Forest and Range Experiment Station	25,873	16	102
North Central Forest Experiment Station	46,287	23	6
Northeastern Forest Experiment Station	-	-	-
Pacific Northwest Forest and Range Experiment Station	5,400	12	1
Pacific Southwest Forest and Range Experiment Station	25,130	23	4
Rocky Mountain Forest and Range Experiment Station	2,106	10	31
Southeastern Forest Experiment Station	32,539	42	3
Southern Forest Experiment Station	-	-	-
Institute of Tropical Forestry	-	-	-
Forest Products Laboratory	-	-	-
Total	2,835,439	10,949	512

TABLE C-5 -- Senior Community Service Employment Program - Fiscal Year 1977*

	Appraised value of work accomplished	Number of participants	Person-years of work
Northeastern Area	111,334	55	18
Southeastern Area	-	-	-
Regions:			
1. Northern	208,396	66	36
2. Rocky Mountain	246,707	122	39
3. Southwestern	81,756	40	23
4. Intermountain	785,090	133	61
5. California	1,038,338	284	137
6. Pacific Northwest	446,970	134	58
8. Southern	1,773,250	524	302
9. Eastern	1,312,264	421	196
10. Alaska	-	-	-
Research Units	-	-	-
Total	6,004,105	1,779	870

*Figures shown represent participation during the interagency agreement period of July 1, 1976 through June 30, 1977.

TABLE C-6 -- Title X, Job Opportunities Program - Fiscal Year 1976 To Date

	Appraised value of work accomplished	Number of participants	Person-years of work
Northeastern Area	7,858,885	1,298	543
Southeastern Area	5,899,291	1,199	477
Regions:			
1. Northern	1,884,120	1,030	223
2. Rocky Mountain	948,024	280	71
3. Southwestern	2,338,824	353	170
4. Intermountain	202,626	139	17
5. California	4,310,799	1,094	373
6. Pacific Northwest	8,045,083	1,738	486
8. Southern	4,810,470	986	434
9. Eastern	2,614,842	513	233
10. Alaska	444,054	58	16
Research Units:			
Intermountain Forest and Range Experiment Station	291,671	55	18
North Central Forest Experiment Station	107,000	8	2
Northeastern Forest Experiment Station	301,000	51	24
Pacific Northwest Forest and Range Experiment Station	-	-	-
Pacific Southwest Forest and Range Experiment Station	854,233	134	60
Rocky Mountain Forest and Range Experiment Station	-	-	-
Southeastern Forest Experiment Station	-	-	-
Southern Forest Experiment Station	-	-	-
Institute of Tropical Forestry	-	-	-
Forest Products Laboratory	-	-	-
Total	40,910,922	8,936	3,147

APPENDIX

PART D.

DEFINITIONS

DEFINITIONS

Developed Recreation Use -- The amount of recreation at developed public sites (those sites owned, maintained solely and operated by the Forest Service) and developed permittee sites (those sites operated and maintained by a permittee for concentrated use under a special use permit). This includes all developed Visitor Information Service sites. Accomplishment is measured in recreation visitor days (RVD). A RVD may entail one person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individuals or group use, either continuous or intermittent.

Dispersed Recreation Use -- The amount of recreation visitor day usage that occurs in areas not developed for concentrated recreation use. This includes all undeveloped areas, roads, trails, and water areas not treated as developed sites. Accomplishment is measured in recreation visitor days (RVD). A RVD may entail one person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

Wilderness Maintained -- Those areas of land of underdeveloped Federal lands classified as wilderness by Congress and administered by the Forest Service.

Trail Construction/Reconstruction -- The construction of new trails, relocation or upgrading of existing trails to a different standard (including bridges and other structures needed for safe and planned use). Accomplishment is measured in thousands of miles.

Habitat Improvement -- The acreage benefited by completing wildlife habitat improvements such as fences, guzzlers, seeding grasses, establishing browse and habitat improvements such as as fish passage structures, spawning beds, fish ways, and dams for the purpose of increasing wildlife productivity or quality. Accomplishment is measured in thousands of acres.

Grazing Use - Livestock -- The occupancy of land and utilization of forage by grazing animals. The unit of measure for grazing use is animal unit month (AUM). Animal unit month is the amount of feed on forage required by an animal unit (normally one mature cow or five adult sheep) for one month.

Potential Yield -- The maximum harvest that could be planned from the forest to achieve the perpetual sustained-yield harvesting level attainable with intensive forestry practices, considering the productivity of the land, conventional logging technology, standard silvicultural treatments, and, most important, the interrelationship with other resources and the environment. It is the term most closely allied to "allowable cut." Potential yield is also often referred to as the "full allowable cut." Measured in billion cubic feet of wood.

Timber Sale Offering -- The amount of timber offered for sale from National Forest land, including the timber prepared on long-term sales (Regions 3,4 & 10) and released for harvest. Accomplishment is measured in billion board feet of timber (BBF) local scale.

Silvicultural Exams -- The process of gathering in-place field data for a forest stand or area to determine its current condition and to provide a basis for silvicultural and other management decisions.

Reforestation -- Setting out seedlings, transplants or cuttings, or scattering or placement of seed over a designated area for the establishment of a forest stand; or the removal of unwanted vegetation, slash, stumps and roots before natural seed fall.

Timber Stand Improvement -- The filling deadening, or removal of trees in a young stand in order primarily to accelerate diameter increment on the remaining stems and maintain a specific stocking or stand density range and also, by suitable selection, to improve the vigor and quality of the trees that remain. Includes fertilizing of established stands for the enrichment of forest soils with commercial or chemical nutrients on manures for the purpose of increasing or maintaining tree growth, release and weeding, pruning, prescribed burning to control understory species and disease, and animal control.

Road Construction -- The building of a roadway and related facilities to a specified standard, including surface areas, shoulders, parking and side areas, associated structures, and such traffic control devices necessary for safe and efficient utilization.

Fire Prevention -- Forest Service activities intended to help prevent fires, detect forest fires, and actually fight forest fires.

Fuels Management -- Includes disposing of, reducing, manipulating and/ or modifying forest fuels over an area to meet fire management objectives. Included is the inventory and analysis of existing and produced fuels, the preparation of the treatment plan, and the accomplishment of the planned work. Accomplishment is measured in thousands of acres treated and counted in the year during which the work is completed to planned standards.

Land Acquired and Exchanged -- The purchase, donation, acquisition or acceptance of title to any land for the purpose of meeting administrative, conservation, or other public needs, or to consolidate existing National Forests. Accomplishment is measured in acres offered for purchase, donation or exchange.

Land Line Location -- Surveying, marking, and posting existing lines and corners or relocating a line between authentic property corners to State and/or Federal standards by an authorized surveyor. This includes corner search, Bureau of Land Management (BLM) coordination, monumentation, and remonumentation. Accomplishment is measured in thousands of miles.

Mineral Leases and Permits -- Those leases and permits relating to minerals resources where the Forest Service gives recommendations, and/or approvals to the Bureau of Land Management on the granting of leases. Accomplishment is measured in millions of acres covered by acted-upon permits.

Soil and Water Resource Improvement -- Activities carried out on a watershed or areas of soil to improve the quality of productivity of the soil resource, quality of productivity of the soil resource, quality of timing on waterflow. Activities include erosion reduction, soil quality enhancement projects, channel stabilization, sediment retention, water yield improvement, and streamflow timing. Accomplishment is measured in thousands of acres treated.

Insect and Disease Survey -- Survey for the detection and evaluation of insect and disease pests and environmental pollutants which affect forest vegetation. The State and private assistance includes: environmental coordination; certification and training of pesticide applicators; economic impact and analysis of major forest insect and disease pests; Cooperative Pest Action Program; and assistance to land managers to initiate prevention-type activities to reduce susceptibility of resources to damage caused by attacks from insect and disease pests. Accomplishment is the gross forested acreage covered in survey, prevention, and other activities.

Insect and Disease Suppression -- Suppression action using either mechanical, biological, chemical or cultural means. Accomplishment is the gross forested acreage treated.

Receipts to Treasury -- Receipts deposited with the U.S. Treasury in the Forest Service account.

Recreation Technical Assists -- Furnishing recreation-related technical help in the development of plans that result in modification of silvicultural practices, or maintenance of an area of forest land for recreational purposes on private, county, or State owned land. It includes recreational influence zones surrounding the area of facility that received actual physical treatment (and support). Accomplishment is counted when the assistance work for a recipient is completed.

Wildlife and Fish Technical Assists -- Assistance in the development of plans, construction, silvicultural practices, or improvement of forest land for wildlife habitat. Accomplishment is measured by the number of assists made and the acreage affected by those assists.

Forest Range Improvement -- Assistance that leads to an increase in the yield or quality of forage on State and private forest lands for domestic livestock use through development and implementation of improved management practices. Accomplishment is measured in acres affected.

Timber Technical Assists -- This is the number of all loggers and processors who receive assistance in harvesting, processing, drying, or marketing. Activity includes all technical assistance for protection of wood in use and storage. Accomplishment is measured by the total number of loggers and processors assisted, to be counted only once during the fiscal year.

Seedling Production and Distribution at State Nurseries -- Seed testing, equipment development, and Forest Tree Nursery management activities funded through the Cooperative Management Program (CM-4). Accomplishment is counted when seedlings are harvested.

Improved Utilization -- The increased amount of wood that is annually made available for utilization due to Federal and State cooperative programs: harvesting improvements, wood processing, drying improvements, etc. Accomplishment is measured in percent increase of wood per million cubic feet of wood processed and counted at time assistance is completed.

Forest Land Management Plan for Private Woodland Owners -- Includes the preparation of written evaluations and recommendations meeting a State's definition of a management plan for single ownership. The plan deals with one, several, or all forest resources and activities. The purpose is to provide guidance to the forest landowner or manager in developing, protecting, and managing forest land. (Includes plans developed for the Forestry Incentives Program (FIP) and the Agricultural Conservation Program (ACP). Accomplishment is counted when plans are completed.

Number of Fires -- The number of man-caused fires per million acres protected. This is a measure of fire prevention activities. It is compared with the current 5-year average (i.e., CY 1971-75) to determine activity effectiveness. For States, the objective is to achieve the target the State sets for itself. Progress can be measured against the current 5-year average.

Cooperative Water related plans -- These are multi-owner, multi-agency plans developed with assistance from the Forest Service. This activity includes plans such as river basin studies, including work with the Water Resources Council. Accomplishment is measured by the number of plans developed.

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